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Agriculture Outlook '92

New Opportunities for Agriculture

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**68th Annual
Outlook
Conference**

**United States
Department of
Agriculture**

**Washington, DC
December 3-5,
1991**

SCHEDULE AT A GLANCE

TUESDAY, DECEMBER 3

Jefferson Auditorium

9:00 Secretary's Keynote Address; '92 Economic and Farm Outlook

11:00 Turning Environmental Needs Into Farm Opportunities

12:15 **Lunch**

1:45 Expanding Trade Opportunities

**Jefferson
Auditorium**

Cafeteria Meet. Rm.

107 Admin. Bldg.

3:45 How is the Farm
Bill Working?

Dairy Outlook

Transportation

5:30 Secretary's Reception, Cafeteria, South Bldg.

WEDNESDAY, DECEMBER 4

**Jefferson
Auditorium**

**Cafeteria
Meet. Rm.**

**107
Admin.**

**Training Rm.
Auditors Bldg.**

**Grand
Hyatt Hotel**

**Crowne
Plaza Hotel**

8:30 Grains
Outlook

Pesticide
Reregistration

Aquaculture
Outlook

Forest Products
Outlook

10:30 Grains
Panel

Fruit/Veg.
Outlook

Family Economics
Outlook

Cotton
Outlook

Noon **Lunch**

Cotton
Luncheon

1:30 Oilseeds
Outlook

Water
Quality

New Products

Tobacco
Outlook

Farm
Income

3:30 New
Demand for
Biofuels

Livestock
Outlook

Food Price
Outlook

Floriculture
Outlook

Sweeteners
Outlook

Finance
& Credit

5:30

Sweeteners
Dinner

THURSDAY, DECEMBER 5

**Jefferson
Auditorium**

**Cafeteria
Meet. Rm.**

8:30 Improving Food
Labeling

8:30 Rural Development

10:20 Nutrients in the Diet;
Food Assistance Programs
(ends 12:30 p.m.)

10:10 Managing Intergovernmental
Partnerships
(ends 11:30 a.m.)

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture

Washington, D.C. 20250-3900



PREFACE

These pages contain speeches presented during "New Opportunities for Agriculture," the U.S. Department of Agriculture's 68th Annual Agricultural Outlook Conference. Included are all papers submitted by those participating in the program.

The Conference took place at USDA headquarters in Washington, D.C., December 3-5, 1991, with about 1,000 people in attendance. Some 114 speakers and panelists representing government, agribusiness, and agriculture participated in 27 sessions.

This book is organized by order of presentation during the Conference. Focus sessions covered creative solutions for the challenges facing agriculture, trade issues, food labeling and nutrition, and rural development. Concurrent sessions presented the outlook for the farm economy and major commodities and covered many current policy issues.

A separate publication presenting charts used by speakers at the Conference, Outlook '92 Charts, is available. To purchase additional copies of these Proceedings or the chartbook, call 1-800-999-6779 or write ERS-NASS, P.O. Box 1608, Rockville, Maryland 20849-1608. Audio and video cassette tapes of Conference sessions are also available. Information about all of these materials and other publications of interest can be found at the back of this book.

Recipients of these Proceedings will be sent preliminary information on next year's Conference, Outlook '93.

For further information contact Raymond Bridge at (202) 720-5447.

James R. Donald

JAMES R. DONALD

Chairperson

Outlook Conference Steering Committee

World Agricultural Outlook Board
Room 5143 South Building, USDA
Washington, D.C. 20250-3800

February 1992

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ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C. 20250-3900



Outlook '92

For Release: Tuesday, December 3, 1991

NEW OPPORTUNITIES FOR AGRICULTURE

Edward R. Madigan
U.S. Secretary of Agriculture

This is the 68th year that people have met like this at USDA to look into the future. The Auditorium is almost full today. They tell me nearly 1,000 people may attend this week. Maybe this is a tribute to USDA's success in forecasting. Or maybe people just want to see if we get it right this time.

These conferences are meant to be packed with information and insight. Some of the best insight comes from those of you from farm and industry groups outside of Government. Without your enthusiastic participation, these meetings would not be nearly as meaningful.

I would like to recognize the stamina and the contribution of the faithful who have been at these Outlook sessions many times. Would those of you who have attended some of these sessions over a span of 10 years, please raise your hands. That doesn't mean that you had to be at every one, but let's say you are a loyal attendee over the last 10 years.

Now those who have attended some sessions over a span of 20 years; please raise your hands. Let's try a span of 30 years; raise your hands. Dare we try 40 years, anyone?

I just wanted all of you in the audience to notice -- from the numbers who have attended sessions over the last 10, 20, 30, 40 years -- how exciting and invigorating these sessions are and how much they contribute to a long and useful life.

If those of you who have been a loyal attendee over the last several years will come up after this session and leave us your name and address, we will give each of you a copy of the new 1991 Yearbook of Agriculture. It is being released just today. This is the first copy. The title is "Agriculture and the Environment."

This Yearbook is very timely. All of you will find this book to be a good, up-to-date, interesting report on the research and actions within agriculture to enhance water quality and promote soil conservation . . . clean air . . . forest management . . . safe food . . . and the balanced use of natural resources.

Not only that: It is the first Yearbook of Agriculture printed with soybean-based ink, and it's on recycled paper.

The theme of this 68th Outlook Conference is "New Opportunities for Agriculture." I would like to mention just a few of these new opportunities. You might have others. I hope that you share your suggestions with us as you participate in these sessions over the next two and-a-half days.

Before getting to those domestic opportunities, let me talk to you about one of our major markets -- the Soviet Union.

In early October, I spent 10 days in the Soviet Union at the request of President Bush. We looked at the immediate food needs in the Soviet Union for this winter and counseled with them on longer-term changes they might make -- as they embrace a new kind of economic opportunity in a land that is going through a fundamental change in government and economic lifestyle.

The nature of that change will have a profound effect on all of us. So often, the most important thing affecting a farmer in any year happens beyond his or her own farm gate. Even beyond his or her own State. Often beyond our own shores. That's why Outlook meetings such as this are so important.

Two weeks ago on November 20, President Bush announced an additional \$1.25 billion in credit guarantees for U.S. agricultural exports to the Soviet Union. These credits are being distributed in an amount of \$600 million now -- and two later allocations of \$200 million each and one of \$250 million. Added to the \$2.5 billion in guaranteed credit provided earlier, this brings the credit total to \$3.75 billion.

In addition, the President announced that the United States will make available up to \$165 million in humanitarian aid. This will be distributed wherever possible through U.S. private voluntary organizations. This credit and aid, combined with the efforts of our G-7 partners, will help carry the Soviets through the critical winter months.

President Bush also announced on November 20 that the United States will participate in five major activities designed to improve Soviet food production and distribution through private markets. You can have a part in these activities. They include:

- o Setting up a model demonstration farm in the St. Petersburg area.
- o Organizing wholesale markets in Kiev and Moscow.
- o Establishing extension-type educational programs in Armenia, Kazakhstan, and Uzbekistan.
- o Putting U.S. food business executives in 3- to 10-month assignments in Soviet food processing and distribution activities.
- o And extending credit guarantees to American firms for the construction of certain kinds of commercial facilities in the Soviet Union.

You can help in this transition -- with your expertise, with your suggestions, and with your support. I include the people here in the business of agricultural production, processing, and marketing who make American agriculture the most productive system the world has ever seen. I have assured President Gorbachev that you have the expertise and the will to help. We in Government will work with you to give real help to the Soviet Union. I hope you will not hold back.

This assistance to the Soviet Union has important benefits:

- o It will help the Soviet people make a more orderly and positive transition to a free-market economy that will contribute to peace and our own security.
- o This guaranteed credit will move U.S. farm commodities out of the U.S. market, increase our agricultural exports, and directly benefit American farmers.
- o Farmers will, in turn, buy pickup trucks and consumer goods that are manufactured in urban areas, thus providing jobs and helping boost our own economy.
- o This assistance will help maintain and strengthen long-term U.S. farm markets in the Soviet republics.

Our help is vital right now. USDA now estimates that the Soviet grain crop this year will reach only 175 million tons. That is more than one-fourth less than last year. That is the sharpest year-to-year drop in Soviet grain production in years. This year's shortage comes just when the Soviets have more than the usual disruptions and problems with transportation, currencies, allocations, and cross-border shipments between republics. This should be a concern to all of us.

We need to help shield this flame of freedom in the Soviet Union with our helping hands so that the winds of discontent don't blow out the candle at such a critical time. We have already helped with our substantial guaranteed credits for Soviet food purchases. Since January 1991 we have offered the Soviet Union and the republics \$4 billion in food assistance. We are ready to help within our means as we coordinate our assistance with the other industrial nations of the world.

There are other talks we are having with industrial nations -- but in a different context. I'm referring to global trade.

Last month, I participated in trade talks in Europe -- in Brussels, in Rome, and in The Hague -- regarding negotiations in the Uruguay Round of the General Agreement on Tariffs and Trade.

Our hope is to produce and trade. It is basic to world prosperity. It is the only way that we can all grow together. Goods and services that are never produced because of lack of incentive . . . or ingenuity . . . are never shared by anyone. Goods and services that are produced and which aren't shared with others are wasted.

Without fair trade, we all lose.

The only way to determine fair rules of international trade is through an international mechanism such as the GATT.

There is no economic arena where fair trade is more important than in agriculture. Why? Because past GATT agreements have neglected fair rules of trade for agriculture. We now have in our grasp an unprecedented opportunity to reverse the tide of years of increased world protectionism in agricultural trade. Market growth is at our doorstep. It is a new opportunity for American farmers and American agriculture.

We are the most productive and competitive agricultural nation in the world. Yet since World War II we have seen country after country erect higher and higher barriers to keep out imports from U.S. farms. We have seen nation after nation develop regulations that discriminate against our farm products.

We are being shut out of world markets right now because the international rules of trade are stacked against us. If we are going to tap markets in the future, we must do whatever we can to agree to fair rules of trade now.

For five years we have fought the battle of GATT to win greater opportunity for American farmers. For the first time -- in the last few weeks -- we are "meaningfully engaged" in negotiations with the EC. For those five years the GATT Uruguay Round motor has been alternately racing, sputtering, and idling. The clutch has been on the

floor. The vehicle has not moved. Now, at last, the clutch is out and the gears are engaged. How far . . . how fast . . . and where we end up . . . are still in contention. I can't tell you how it is going to come out. But we are engaged and we are fighting every step of the way.

Here at home, the clutch is engaged. And during my term as Secretary of Agriculture, I want to see a shift toward new crop uses.

For years we have talked about the need to increase the demand for agricultural commodities by developing new industrial uses for farm products. We have said that it would put idle land to productive use . . . create jobs in rural America . . . increase farm income . . . use renewable resources . . . reduce our dependence of foreign petroleum . . . and be more environmentally friendly.

There have been some notable successes. Ethanol and soybean-based ink, for example.

Last year, ethanol-blended gasoline used almost 400 million bushels of corn. The Department of Energy estimates that as the demand for ethanol increases, and new feedstocks become economical, the use of ethanol can be many times greater. This year soy inks are using 100 million pounds of soy oil. The potential is many times greater.

Other products are promising: such as paper from kenaf, transmission fluid from rapeseed oil, and bioplastics from starch.

And many companies are doing this: Warner Lambert, Mobil Oil, Time magazine, Cargill, and ADM. These are not rinky-dink companies. USDA should be on the cutting edge of these research activities. And we will be.

Clearly, the time has come to intensify our efforts in the area of nonfood and nonfeed crops and uses of farm products. For one thing, the needs are greater: The Clean Air Act Amendments of 1990 call for cleaner fuels, with a firm deadline. Landfill space is dwindling rapidly. Our dependence on foreign oil is growing. And the demand is more urgent for environmentally friendly, safe-to-handle biodegradable products.

Today, I am announcing a series of actions to accelerate the development of new nonfood and nonfeed crops and uses of farm products:

- o We will develop a plan to put additional Department resources into research and development of new nonfood and nonfeed uses in 1992.

- o We will make a comprehensive review of USDA programs to identify additional opportunities to aid in developing new uses for farm commodities.

o We will seek close industry cooperation throughout the process of research, development, and testing of products and materials: and we will step up the transfer of technology from USDA to industry and producers.

o We are expediting the establishment of the Alternative Agricultural Research and Commercialization Center and its board of directors. We published the announcement in the Federal Register last week. I will select members of that board very quickly.

o We will urge farm groups and Land-Grant Colleges and Universities to support and join us in this renewed effort to develop industrial uses for farm and forestry commodities.

o We will urge other Federal agencies to work with us to identify new market opportunities here and abroad . . . reduce or eliminate barriers to new industrial uses . . . and encourage industrial and rural business participation in this effort.

o We will create an annual Secretary of Agriculture Award to be given to an individual or organization -- in either the public or private sector -- that makes a major contribution to the successful development and promotion of new industrial crops and products.

We have an opportunity to help speed up these changes I have been discussing. We are helping with a strong research initiative in USDA. Success will be lower costs . . . more efficient production . . . cleaner air . . . clearer water . . . safer foods . . . better quality foods . . . a better environment . . . and a more advantaged and competitive U.S. agriculture in the fight for world markets.

The people in this audience . . . and in USDA, and the Land-Grant Universities, and private companies and organizations . . . are on today's frontier, and are shaping this new era today as we meet here. Someplace, somewhere, in this land an important discovery is unfolding at this moment -- we just don't yet know where that is. Together, we will move into that new era of opportunity for agriculture and for the Nation. This Outlook meeting is dedicated to that. We welcome you to be a part of it.

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ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture

Washington, D.C. 20250-3900



Strictly Embargoed for Release 8:00 a.m. EST, Tuesday, December 3, 1991

WORLD AND U.S. AGRICULTURAL OUTLOOK

James R. Donald

Chairperson, World Agricultural Outlook Board

U.S. Department of Agriculture

The world agricultural outlook features smaller crop production but rising animal product output. Commodity demand will be supported by continued economic recovery and population growth. Grain, milk and cattle prices will increase as supplies tighten in relation to demand, while cotton, soybeans and hog prices will be under pressure from increased supplies.

The value of U.S. agricultural exports is expected to reach \$39 billion in fiscal 1992, up about 4 percent from 1991. Higher grain prices and an increased volume of wheat, soybean and horticultural product exports will contribute to the increase in value. Imports of agricultural products are likely to ease. Bigger exports and smaller imports would boost the U.S. agricultural trade surplus to around \$17 billion, up 14 percent from 1991.

This commodity and export outlook suggests cash receipts to U.S. farmers in 1992 close to the year-earlier level. A modest increase is likely in production expenses, mainly because of greater outlays for energy, fertilizer, pesticides and labor. This will leave farmers with net cash income of \$52 to \$57 billion, compared with \$58 billion estimated for 1991. Net farm income, which takes into account commodity inventory changes, is forecast at \$40 to \$46 billion in 1992, a range incorporating the \$44 billion expected in 1991. The farm sector balance sheet points to economic stability in 1992, with both assets and debts showing very small increases.

The 1992 outlook calls for larger supplies of many foods, particularly meats, dampened inflation and a continued slow rise in food prices. Retail food prices are forecast to increase 2 to 4 percent, compared with slightly over 3 percent estimated for 1991.

U.S. crop acreage and production likely will expand in 1992 as producers respond to higher prices and acreage reduction requirements for wheat and feed grains and assuming average growing conditions. Also, more normal growing conditions in foreign countries, especially the USSR, would likely mean higher yields and larger crops.

In the 1990's, U.S. agricultural exports would benefit from reforms in international trade and agricultural policy and from economic growth in other countries.

COMMODITY OUTLOOK

World production is declining for most crops in 1991/92. Unfavorable weather has reduced potential output in major producing countries, including the Soviet Union, Australia and the United States. Animal product output will reach a new record as poultry supplies continue to increase and red meat moves up, particularly U.S. pork production.

World commodity demand is expected to be slightly stronger in response to: Real economic growth of around 2 1/2 percent; population growth of 1.7 percent; and some 2 percent larger meat output will benefit crop use. However, shorter supplies and higher prices will dampen consumption of grains, particularly in the USSR. For the United States, exports will be hurt by expanded supplies of a few commodities in competing countries and/or importing countries, especially corn and cotton.

Total Grains

The dominant factor in world grain markets this year is the USSR. The Soviet grain crop is forecast down 60 million tons (26 percent) from the near-record 1990 crop and procurements by the State from producers are off sharply. While USSR grain imports are forecast up from last year, the larger imports will not be sufficient to offset the reduction in production and procurements.

Global grain production is forecast down 5 percent, but two-thirds of the drop is due to the lower USSR crop. In fact, global output excluding the USSR and the United States is actually slightly larger than last year. The drop in USSR consumption is having a similar, but even more pronounced, impact on world grain consumption. The forecast 14-percent decline in USSR grain consumption drops 1991/92 global consumption almost 2 percent below a year earlier. If the USSR is excluded, consumption shows a small year-to-year rise.

Forecast 1991/92 U.S. grain production is down 10 percent from last year as there was too much rain in some areas and too little in others during critical periods of crop development. While

total 1991/92 use is expected to be down slightly from last year, largely because of lower exports, use will exceed production and stocks will decline. U.S. 1991/92 total grain ending stocks are forecast to be the lowest since 1975/76.

Wheat

The global wheat outlook for 1991/92 is highlighted by smaller supplies, use and ending stocks, but larger trade. While world wheat production is off sharply from last year, it is still the second largest crop on record. Coincidentally, wheat output in the USSR and the United States are both around 28 percent below last year. Aggregate output in the remaining countries is up slightly. The United States and the USSR also account for most of the forecast reduction in 1991/92 global consumption and ending stocks.

The outlook for U.S. wheat in 1991/92 is for sharply lower supplies, reduced domestic use, but higher exports. Although down from 1990/91, total use will exceed production and 1991/92 ending stocks are expected to be the smallest since 1974/75.

Despite sharply higher carryin stocks, 1991/92 U.S. supplies will drop below 3 billion bushels for only the second time since 1978/79. Harvested acres are down 17 percent because of larger area idled under government programs and relatively low prices, while various unfavorable weather conditions dropped yields well below last year's record.

Total use is down from 1990/91 because of an expected drop in wheat feeding. However, the first year-to-year rise in global imports since 1987/88 is expected to lead to an 8 percent increase in U.S. exports.

World wheat trade in 1991/92 is forecast up almost 11 million tons to its third highest level on record. While a number of countries are expected to show significant gains or reductions in imports from last year, the USSR and China are the main focus. Import gains of 5 and 6 million tons, respectively, are forecast for China and the USSR. Of course, attaining the forecast USSR imports will hinge on substantial financial assistance from a number of countries.

Despite the larger world import demand, competition for markets will remain intense. The EC and Canada entered 1991/92 with larger stocks and both are expected to have record wheat crops in 1991. Also, several smaller importers have relatively large exportable supplies, which they are trying to move onto world markets.

U.S. wheat production will likely be up in 1992 because of less acres idled under government programs and higher prices. However, given the outlook for reduced ending stocks this year, production will have to be up almost a fifth in 1992/93 just to keep supplies at this year's level. A rebound in foreign production will largely depend on the USSR. Planting progress reports point to an increase in USSR winter grains area of 10 percent or more. The major foreign countries' exportable supplies will likely remain large, as their carryin stocks are forecast up 20 percent from a year earlier.

Coarse Grains

The outlook for world coarse grains is similar to wheat--declining production, use and stocks. However, unlike wheat, world coarse grain trade is expected to drop this season. Larger 1991 crops in Europe and parts of Latin America, increased competition from wheat for feeding in Korea, and the USSR's financial difficulties are the major factors behind the expected reduction in world coarse grain trade. The same factors are responsible for an expected 10-percent reduction in 1991/92 U.S. corn exports.

World coarse grain production for 1991/92 is forecast down 4 percent from last season because of the lower Soviet and U.S. crops. The rest of the world is expected to show a small increase from 1990/91. Global supplies are down 2 percent as the lower production more than offsets 9-percent larger carryin stocks. Despite an expected drawdown in stocks, world consumption is forecast to drop by 2 percent. However, if the sharp reduction in USSR consumption is excluded, consumption would show a small year-to-year gain.

U.S. feed grain supplies are forecast down 3 1/2 percent as the smaller crop will more than offset slightly larger carryin stocks. Although smaller exports are expected to result in a small decline in total use, use will exceed production and stocks will drop. Ending stocks of feed grains are forecast to be the smallest since 1983/84.

This year's corn crop of nearly 7.5 billion bushels is down 6 percent from 1990, as weather-reduced yields more than offset the higher harvested area. Production of the other feed grains is mixed, ranging from a 10-percent increase for barley to a 32-percent drop for oats. Domestic use of corn is expected to continue to expand in 1991/92, boosted by higher meat production, reduced supplies of the other feed grains and less wheat feeding. However, the forecast reduction in corn exports will offset the larger domestic use, leading to a very small drop in total use of corn. Still, ending stocks of corn are forecast to be the lowest since 1983/84.

World corn trade was down one-fifth in 1990/91 and another 3 percent reduction is forecast for this year, as imports by the USSR, Mexico, Eastern Europe, and South Korea will decline. Increased use of wheat for feeding accounts for the declining corn demand in Korea, while Mexico's lower imports are tied to record large 1990 and 1991 corn crops. Corn imports dropped in Eastern Europe because consumer subsidies were cut and financial conditions were poor. This year, a much larger corn crop will reduce European corn imports even more.

For many years the USSR has been the major determinant of the level of world corn trade and this year will be no different. While in prior years the level of USSR corn imports largely was a function of the size of the USSR grain crop and procurements, financial assistance will be the key determinant in 1991/92 USSR imports.

U.S. corn exports for 1991/92 are forecast to drop 10 percent because of the reduced world imports, increased competition from the EC, Eastern Europe, and Argentina, and continued strong competition from China in a number of markets in Asia.

Looking ahead to 1992, U.S. corn production will likely increase, assuming trend yields and higher planted acres because of lower area idled under government programs. Foreign coarse grain production will largely depend on the USSR production and whether China can continue to achieve the relatively high yields of the past two years.

Rice

Global rice production in 1991/92 is forecast at 346 million metric tons, down 2 percent from last year's record harvest. Smaller crops in China and India account for much of the decrease, along with adverse weather in parts of southeast Asia and production shortfalls in South Korea and Japan. Global consumption is forecast down marginally, the first decline since 1987/88. World ending stocks are expected to decline 2 percent from last year's record level. World trade in calendar 1992 is forecast to rise 4 percent to 12.9 million metric tons.

U.S. production in 1991/92 is forecast at 159 million cwt, up 2 percent from last year. Domestic and residual use is forecast to rise 2 percent, more than offsetting marginally lower exports. U.S. market share is expected to remain at 17 percent in calendar 1992. Carryout stocks in 1991/92 are forecast to rise 5 percent. The season-average price is forecast at \$6.75 - \$7.75 per cwt, compared with \$6.60 - \$6.80 estimated for 1990/91.

Given normal weather global, rice production could expand next year. World prices are expected to decline slightly as competitors vie for limited expanding markets. Over the next several years, the marketing loan program will ensure U.S. export prices are competitive. However, as long as U.S. supplies remain tight, exports will have to compete with expanding domestic use.

Oilseeds

Global oilseed supplies in 1991/92 are forecast at a record of about 222 million metric tons, up 2 percent from 1990/91. Most of the rise is in soybeans and cottonseed, led by rises in the United States and Brazil. Growth in high oil content seeds such as sunflowers and rapeseed slowed some but rapeseed production reached new highs, with the sharpest gains in Canada and the EEC. This added to world vegetable oil production which is reaching a new high in 1991/92 of about 60 million tons, up 3 percent. Palm oil production, forecast up 7 percent, is the biggest gainer, tracking closely its 10-percent-plus growth rate in the 1980's. Soybean oil production, by contrast, grew at a rate of only 2 percent in the 1980's and is forecast to rise this year by just 1 percent.

World soybean production is forecast to rise by 2 percent in 1991/92 as Brazil's crop is expected to recover from drought-reduced yields, while U.S. yields are above average in response to relatively good crop conditions and acreage concentrated more heavily in the Corn Belt. A sharp downturn in China's soybean crop offsets some of these gains. Argentina's soybean outturn is forecast to be little changed in 1991/92 as relative returns slightly favor competitive crops, particularly corn.

World demand for soybeans and products showed little or no growth in 1990/91 and the prospects for 1991/92 are only slightly better. Supplies of other oilseeds and oils, particularly rapeseed, cottonseed and palm oil are still at high levels. In addition, use of all seeds and oils is lagging well below trend growth. The economic and political difficulties in a number of key importing and consuming countries, particularly the former centrally-planned economies, have sharply curtailed global use expansion. Actual consumption and import needs of countries like the USSR remain a major uncertainty in this year's outlook. Use will depend importantly on aid granted by the United States and other industrialized countries.

In the United States, total soybean supplies are up about 6 percent in 1991/92. Above-average gains expected for exports will allow total use to about match supply gains, leaving stocks down only slightly from last year's 329 million bushels. Domestic use of soybean meal will be constrained by reduced feeding

profitability, while soybean oil use will encounter strong competition from other vegetable oils particularly cottonseed, rapeseed and corn. With product prices under pressure, soybean prices are forecast to average slightly below year earlier levels of \$5.75 per bushel. Lower prices for soybeans will likely lead to some reduction for area in 1992.

Cotton

Record production and consumption, along with some building of stocks, highlight 1991/92 world cotton prospects. World output is projected at nearly 92 million bales, up 5 percent from 1990/91 as last spring's relatively high prices encouraged record plantings. Yields also are record high. The United States is accounting for more than half of this season's gain in global production, followed by China and India. Soviet output is down nearly one-tenth.

World cotton use, forecast at nearly 88 million bales, is up 2 1/2 percent in 1991/92, maintaining the growth rate of the past decade. Larger consumption is particularly evident in exporting countries such as the United States, China, Pakistan and India. However, use in importing countries, mainly in Europe and the Far East, is down 3 percent this season. Thus, global trade is up only slightly to 24 million bales. This season's ending stocks are placed at 31.4 million bales, 13 percent above the beginning level and equal to 36 percent of use, near the 5-year average.

The 1991/92 U.S. cotton outlook features near-record production, strong demand, and a sharp recovery in stocks from last season's 40-year low. The crop is forecast at 18.2 million bales, up almost one-fifth from 1990 and second only to 1937's 18.9 million. Use is expected to total 16.3 million bales, nearly matching the previous 2 season's relatively high levels. While mill use is projected to hit a 25-year high of 9.1 million bales, exports are placed at 7.2 million bales, equal to 30 percent of world trade. Ending stocks are forecast at 4.4 million bales, nearly double the beginning level, and equal to 27 percent of use, slightly below the 5-year average. With stocks building this season, current spot market prices are down 15 cents per pound from a year ago and the lowest in 2 1/2 years.

An early look at 1992/93 points to a much closer balance between U.S. cotton production and use. Use is expected to remain relatively strong -- in the 16-17 million bale range -- and close to this season's anticipated level. This means that less acreage and production will be needed in 1992/93 to balance use and achieve the 30-percent stocks-to-use ratio targeted in the current farm bill. To accomplish this goal, a preliminary 10-percent Acreage Reduction Program (ARP) for upland cotton was announced October 31. This compares with the 5-percent ARP in effect for

the 1991 crop. A final ARP decision will be announced by the end of December, taking into account any changes in supply and demand which have occurred since October.

Sugar

World sugar production is expected to exceed consumption in 1991/92. However, the excess is forecast as less than 800,000 metric tons compared to more than 3.5 million tons last season. Prices last season stayed in the 8 to 9 cents per pound range. Relatively low stocks coming into the season kept prices from falling further.

World production in 1991/92 is forecast to be down slightly from last year, but consumption, driven by rising demand in developing countries, particularly in Asia, will advance. Stocks may increase slightly from last season's level. The end of season stocks-to-use ratio is forecast at 20 percent, the same as last year. Unless sugar consumption in the USSR drops sharply, the world sugar price may remain relatively stable through most of the coming season.

U.S. sugar production is forecast to increase 6 percent in the 1991/92 October-September year. The gain can be attributed to recovery from freeze damage in Louisiana and recovery from drought in the Red River Valley of the North.

U.S. sugar use is likely to increase nearly 2 percent in 1991/92. Domestic use has increased every year since 1986/87. In the last two years, sugar consumption increases have outpaced the growth of high fructose corn syrup (HFCS). The high intensity artificial sweeteners are cutting more into the demand for HFCS than for sugar.

Because of higher U.S. production, the U.S. tariff rate import quota for sugar was cut 34 percent in 1991/92. If the quota is filled, imports will account for 17 percent of U.S. sugar use.

Livestock and Poultry

World animal-product output likely will increase a little over 2 percent in 1992, following an expected rise of less than 1 percent for this year and an increase of almost 2 1/2 percent in 1990. Red meat production will be about unchanged this year, but an increase of nearly 2 percent is expected next year. Both beef and pork output are expected to expand in 1992. Poultry meat production continues to expand, but the rate of growth has slowed. World output is projected to increase nearly 4 percent in 1992, about the same increase as anticipated for this year, but below the 5 1/2 percent in 1990.

Total U.S. meat production in 1992 will increase almost 4 percent from this year's record large output. Strong gains in pork will lead the way.

The U.S. cattle inventory at 99.4 million head on January 1, 1991, was up over 1 percent from the 1990 level. The cow inventory at the beginning of the year was up 1 percent from a year earlier and the indicated calf crop for 1991 is up 1 percent. Total cattle and calf slaughter in 1991 will be down from the year-earlier level and this, combined with the indicated larger calf crop, will result in an increase in the January 1, 1992, cattle inventory.

Following high levels of placements of cattle on feed in the last half of 1990, the number of cattle on feed at the beginning of 1991 was up over 10 percent from a year earlier. Placements have declined this year, particularly during the summer. Meanwhile, fed cattle marketings during 1991 will be about unchanged from the year-earlier level. The number of cattle on feed at the beginning of 1992 will be down sharply from the previous year. With a larger supply of cattle outside feedlots, placements on feed during 1992 are expected to increase from the 1991 level. So, in spite of a decline in the number on feed at the beginning of the year, the larger placements will support an increase in fed cattle marketings in 1992. Cow slaughter likely will increase in 1992.

Beef production in 1991 is being boosted by an increase in average slaughter weights that reached record high levels. Average weights are not expected to change much in 1992 and beef production likely will rise about 1 percent as total cattle slaughter increases.

In response to favorable returns in 1990 and most of this year, pork producers are expanding output. Pork production trailed the year-earlier level in the first quarter of this year, but since then it has increased. For all of 1991, production will be up about 4 percent. As production expanded, hog prices weakened and barrow and gilt prices in 1991 will average around \$49 per cwt, down about \$5 from the 1990 average. Production is expected to increase about 8 percent in 1992, putting additional pressure on prices. Large supplies of competing meats will also pressure prices lower and the average for the year likely will be \$39-\$45 per cwt. Prices at this level will severely squeeze producer returns.

U.S. poultry meat production continues to trend upward, but the rate of growth will slow in 1992. Broiler producers will expand output over 6 percent this year and broiler prices will average around 51 cents per pound, down about 3 cents from the 1990 level.

While continuing positive, producer returns in 1991 are down from the level of the past few years. These smaller returns and prospects for a further squeeze on returns in 1992 are expected to result in a slowing in the increase in broiler production. An increase of around 4 percent is likely in 1992 and prices are expected to average 46-52 cents per pound. The growth in turkey production slowed to 2-3 percent this year as producers faced a year of poor returns. Cold storage stocks of turkeys grew to record high levels this year as the rise in per capita consumption slowed. Turkey supplies for the late 1991 holidays will be record large and prices under strong downward pressure from these and large competing meat supplies. Hen turkey prices in 1991 are expected to average around 60 cents per pound, down about 3 cents from the 1990 average. With the squeeze on producer returns, production in 1992 likely will expand only 2-3 percent and prices are expected to average 56-62 cents per pound.

Egg production will increase about 1 percent in 1991 and almost 1 percent in 1992. Egg producers have had favorable returns the past few years. But they have shown more restraint in their production response to favorable returns the last few years than was true 5 to 10 years ago. Egg prices have declined as production rose this year and the Grade A large price will average around 78 cents per dozen for the year. A small decline in prices is likely next year as production expands further.

Dairy

Milk production during 1990/91 was up slightly more than 1 percent from 1989/90. Production was up sharply in the first quarter of the year, but as the year progressed the increases narrowed. Then during the spring, production dropped below the year-earlier level. Declining cow numbers and weak output per cow contributed to the lower milk production. Output per cow is now strengthening and will add to milk production during 1991/92. The number of milk cows is expected to continue to decline, but the rate of decline is projected to slow from that seen during the past year. Production in 1991/92 is expected to increase slightly from the previous year.

Commercial use during most of 1990/91 trailed the year earlier level. But, during the summer use started to strengthen and a gain was posted for the July-September quarter. For all of 1990/91, commercial use was down about 1/2 percent from the previous year. In 1991/92, use is expected to rebound and rise 2-3 percent.

CCC net removals under the price support program in 1990/91 totaled about 10.4 billion pounds, milk equivalent, milkfat basis. Net removals are expected to decline in 1991/92 as commercial use shows strong gains and milk production changes only slightly.

The all milk price declined in 1990/91 and averaged \$11.94 per cwt. However, prices moved above the year-earlier level in the summer and are expected to average in the range of \$12.05 to \$13.05 per cwt in 1991/92. But as production continues to increase later in the year, prices are expected to weaken and fall below the previous year's level.

U.S. AGRICULTURAL EXPORTS

Fiscal 1992 agricultural exports are forecast at \$39 billion, up 4 percent from \$37.5 billion in 1991. Higher grain prices and an increased volume of wheat and oilseed product exports will contribute to the increase in value. Also, exports of high-value products will add to exports, including horticultural and poultry products.

Agricultural imports are expected to ease in fiscal 1992, reflecting lower volume and prices for livestock and products and for some tropical products, including sugar.

Larger exports and smaller imports will result in a trade surplus of around \$17 billion for fiscal 1992, up 14 percent from \$14.9 billion in 1991.

Japan will continue to be our leading market for agricultural exports. The top 7 markets will account for nearly three-fourths of the total.

U.S. FARM INCOME AND FOOD PRICES

U.S. farmers are likely to see their incomes slip in 1992, as cash receipts about hold but production expenses move a little higher. Consumers will find record meat supplies and slow inflation, pointing to a moderate food price rise.

Farm Income

In 1991, net cash farm income is expected to total \$58 billion, below the record \$62 billion in 1990. While receipts will be the second highest ever, they will not match the 1990 record, because of lower livestock receipts, particularly dairy. Production expenses will move up only 1 1/2 percent, with higher prices for manufactured inputs, and for other inputs, especially labor.

For 1992, the outlook is for a net cash farm income to total \$52 to \$57 billion, compared with the year-earlier level of \$58 billion. Marketing receipts are likely to nearly match 1991, with both crop and livestock receipts approaching year-earlier levels. But production expenses will move slightly higher because of

increased 1992 crop acreage and higher prices for a few inputs, including energy, fertilizer and pesticides.

Net farm income, which takes into account commodity inventory changes, in 1992 is forecast at \$40 to \$46 billion, a range incorporating the \$44 billion estimated for 1991. The balance sheet for the farm sector points to economic stability in 1992, with both assets and debts showing very small increases.

Food Prices

Retail food prices are estimated to increase slightly over 3 percent in 1991, well below the rise of 5.8 percent in 1990 and less than the 4-percent plus increase expected in the overall CPI in 1991. The easing in food prices in 1991 reflected increased supplies of meat and a slowing of inflation in the economy.

In 1992, a modest food price rise of 2 to 4 percent is in prospect. Record meat supplies will dampen the food price rise. Very importantly, marketing costs likely will continue to increase moderately if inflation is in the expected 3 to 4 percent range.

CROP OUTLOOK FOR 1992 AND BEYOND

1992 Crop Outlook

U.S. crop production is down about 2 percent in 1991, due to smaller planted acreage and weather-reduced yields. Acreage taken out of production under Government annual and long-term programs reached around 64 million acres, up 4 percent from 1990. The mix of acreage shifted in 1991, since farmers had greater planting flexibility. A net of 5.7 million acres were "flexed," with 4.2 million base acres intended to be shifted to soybeans. (Flex acreage is acreage planted to approved crops other than the crop for which the base was established on up to 25 percent of base acreage.)

Crop acreage is likely to show some expansion in 1992, as producers respond to higher prices and smaller acreage reduction requirements for grains. However, for soybeans and cotton, area may slip as prices have been under pressure and the preliminary acreage reduction requirement is up for cotton.

U.S. crop yields are below trend this year for most crops. Yield potential was reduced for wheat by both excess moisture and prolonged dryness. Corn in particular suffered from drought in parts of the Corn Belt.

If yields return to trend in 1992, the combined average wheat and feed grain yield would be well above the 1991 level and slightly exceed 1990. Coupled with larger acreage, production would rebound from this year's reduced level, particularly for wheat.

For other countries, yields are slightly below trend. A return of more favorable growing conditions, even without an acreage increase, would result larger wheat and coarse grain production in 1992.

Demand for 1992 crops is likely to expand in response to further economic recovery around the world and continued large livestock feed requirements and population growth.

Potential Trade Growth In The 1990's

Later in the 1990's, world commodity consumption and trade are expected to respond to an easing of trade barriers and stronger economic growth. U.S. agricultural exports stand to gain, since U.S. producers and marketers will be competitive in world markets.

Among the economic regions, developing countries appear to offer the best potential. They have shown the most growth in imports and the United States has become increasingly dependent on imports by these countries, with about one-half of both world trade and U.S. exports of grains now going to developing countries. The pace of imports by these countries should increase in the 1990's, assuming trade and farm policy reforms, a faster economic recovery and debt reduction. The United States would be in an excellent position to supply larger amounts of commodities as these countries increase consumption.

Industrialized countries abroad have expanded production and exports of agricultural products, while cutting back on imports. Proposed reforms would have a major impact on production and trade in grains and oilseeds by these countries. For example, in the European Community (EC) and Japan, a loosening of trade restrictions and reform of farm policies would result in larger imports of agricultural products.

Economic growth in former centrally-planned countries will eventually benefit from restructuring of economies. In recent years, they have accounted for 29 percent of world imports of wheat and coarse grains. In the years ahead, many of these countries will strive to become more self-sufficient in production of agricultural products. However, they likely will need relatively large imports of agricultural products in response to economic growth and rising consumption.

Among these countries, the USSR has accounted for 18 percent of world trade in wheat and coarse grains since the mid-1980's, slightly below the first half of the 1980's, but well above the 1970's. U.S. exports to the USSR in recent years have averaged 16 percent of total U.S. wheat and coarse grain exports, above the 12 for the earlier years. There is considerable longer-term

potential for rising Soviet imports of feedstuffs as meat demand grows and livestock and poultry numbers expand in response to economic recovery and enhanced consumer purchasing power.

In summary, global trade will likely increase in the 1990's stimulated by trade reform and economic growth. The United States will be in a position to take advantage of the growth in trade, aided by efficiency and reliability in both production and marketing of agricultural products.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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Outlook '92

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TURNING ENVIRONMENTAL NEEDS INTO FARM OPPORTUNITIES

Ann M. Veneman
Deputy Secretary

It's a pleasure to be here today and to serve as moderator of this panel. The theme of our session this morning will be "Turning Environmental Needs into Farm Opportunities." Today, we will be privileged to hear from three speakers: Dr. Bruce Gardner, who is Assistant Secretary for Economics; Mr. James R. Moseley, who is Assistant Secretary for Natural Resources and Environment; and Professor Otto Doering, who is from the Department of Agricultural Economics at Purdue University. They will address various environmental needs and the opportunities they see for U.S. agricultural producers. I am confident you will benefit from their views and insights.

In recent years and with heightened interest, we have seriously reflected on how we are using our environment. We are carefully evaluating our own actions and practices as we see their effects on the environment. We are seeing environmental issues assessed and addressed around the globe. This has increased our awareness of the need to conserve and protect the environment. Moreover, it has prompted us to take decisive action on its behalf.

Long before it became fashionable to talk about saving the environment, farmers and ranchers were already involved. Before there was an environmental movement, farmers and ranchers were in the forefront of our efforts to protect the environment. This is probably because of their closeness to the land and their special bond with it. They have always realized that the environment is more than the infrastructure of agriculture. They understand its importance.

Today, thanks to new farming practices and innovative technologies, farmers and ranchers are able to do even more to protect the environment. And so are Americans everywhere. Together, we have reaffirmed our responsibility and our commitment to conserve and protect the environment -- our national heritage and the legacy of future generations.

This new awareness of the environment calls for a new approach to conserving resources. Step by step, we are addressing environmental issues. We are finding solutions. And, ladies and gentlemen, we are making progress. For example, we are developing alternative clean-burning biofuels to reduce air pollution as well as our dependence on foreign oil. We are developing new products from farm commodities to replace existing products that may harm the environment. In particular, we are developing alternatives to traditional pesticides and chemicals that accomplish the same purpose without the potential for detrimental effects. You will hear more about these and other promising initiatives from our speakers today.

Many of the environmental challenges confronting us today are really opportunities in disguise. Our efforts to address critical environmental issues through new technologies are proving that. These developments will have huge benefits for farmers and ranchers as well as for other Americans. Expanding the uses for agricultural resources through technological innovations will lead to new ways to protect the environment. It will also increase demand for agricultural commodities through new uses. This will create a new generation of environmentally friendly, biodegradable products. But it will also have many other beneficial effects as well. It will create new industries and businesses and open new markets for farmers and ranchers. And it will stimulate economic growth, add new jobs and improve our trade balance.

Today, we can meet our commitment to conserve and protect the environment by developing new technologies and alternative uses for farm commodities that help us accomplish that goal. The needs of society and the environment can both be addressed. Innovative technologies and new ways of thinking about environmental concerns and societal needs have shown us that both the environment and society can win.

These are the positive changes that have come about through new technologies and the development of alternative uses. Meeting environmental needs is creating unlimited possibilities and untold opportunities for farmers and ranchers. And it is ensuring the protection of our environment. We can go forward with confidence that the environment and society cannot only coexist but cooperate for the benefit of both. Together, they can be partners in conservation and progress.

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NEW DEMANDS FOR BIOFUELS AND ALTERNATIVE PRODUCTS

Bruce Gardner
Assistant Secretary For Economics
Department Of Agriculture

Introduction

With ever greater competition in the global market, it's prudent for U.S. agriculture to look for ways to boost demand for farm products here at home. The industry is doing that by searching for new uses for farm products and new products that more effectively meet the needs and desires of today's consumers. Environmental concerns are a major force behind those needs and desires and so hold great opportunity for U.S. agriculture.

Environmental concerns are forcing us as a Nation to find cleaner burning fuels that emit less pollution into our atmosphere. Agricultural and forestry products can meet that need.

Even apart from environmental factors, longer-term trends indicate that economic forces will inevitably add biofuels to our national energy mix. Fossil fuels are limited in supply. As demand for fossil fuels increases and reserves are drawn down, costs will rise. The trends in raw material prices since World War II show a pattern that seems destined to continue. The real price of renewable resources such as corn, has fallen because technological progress has yielded less expensive ways of producing the same product. But the price of nonrenewable resources has risen (see chart). At post-war rates, the price of crude oil will double relative to the price of corn every 17 years.

The economic health of U.S. agriculture will receive a much-needed boost from biofuel demand. The resulting increase in demand for farm and forestry products will lessen the need to idle productive land in set-asides. This will reduce the need for Government support and will be welcome news for both farmers and taxpayers.

All of these important facts are reasons why Secretary Madigan is greatly intensifying USDA's commitment to the development and production of energy from farm products.

Biofuels Policy

The President's National Energy Strategy provides the Administration's views on energy. It demonstrates a clear commitment to accelerate biofuel research and development. It incorporates provisions in the Clean Air Act Amendments of 1991 (CAA) and ethanol tax credits that were extended under the Omnibus Budget Reconciliation Act of 1990. Additionally, the 1990 Farm Bill authorizes \$100 million for biofuels research over the next 5 years. To follow up on the President's strategy and the major legislation just mentioned, the USDA has a new commitment to build on an existing research and development agenda that is aimed at discovering and promoting efficient, economically competitive agricultural energy.

The Clean Air Act creates new market opportunities. There are 41 areas of the country that must reduce carbon dioxide emissions because of the Act. Nine areas must reduce ozone. Combined, this comprises a market accounting for 37 percent of U.S. gasoline sales. What's more, Information Resources, Inc., suggests that because of public demand for cleaner fuels, close to 80 percent of all U.S. gasoline will be of reformulated quality by 2000, perhaps reaching 100 percent by the year 2005.

In summary, there is a potentially large market for which ethanol can play a significant role. It is a market where the increased cost of reformulating gasoline makes ethanol blends and ETBE more price competitive.

Replacing fossil fuels with agricultural biofuels is good for the environment because it will reduce carbon dioxide in the atmosphere. Burning ethanol releases as much carbon as fossil fuels; however, growing the crop also removes carbon from the atmosphere. Many unanswered questions remain about the relationship of CO₂ concentration and climate warming, and about the consequences of such warming, but it is prudent to choose policies that produce the least atmospheric CO₂.

Because ethanol and other agricultural energy sources help farmers and the environment, the Department of Agriculture has been, and will be, a strong supporter of policies that foster and expand the use of these energy sources.

Benefit-Cost Analysis

The policies that have been most contentious have involved subsidies to ethanol production in the form of tax credits. The issue can be posed as follows: given a 54-cent per gallon tax credit on ethanol production, do the benefits of expanding ethanol use outweigh the costs?

There are several ways to make this assessment. Perhaps the most straightforward is to consider taking an acre that is currently idled under the corn program, grow corn on that acre, and convert the corn to ethanol. The calculations necessary for this assessment are complicated, but we can simplify them by recognizing that the cost of ethanol will tend to exceed the market value by the amount of the tax credit, i.e., 54 cents per gallon. The 54 cents is a cost to government and society. It is a cost that must be offset by other benefits.

These benefits include three main items: the clean-air benefits of ethanol, the national security benefits of replacing imported oil, and the economic gain of using land that would have been idle if it weren't being used to produce ethanol. All three are difficult to quantify. Indeed the only one I will even attempt today is the last item. The cost of idled land and associated fixed factors for an average corn producer is about \$90 per acre. Using a yield of 100 bushels per acre, somewhat less than the U.S. average (because set-aside land tends to be less productive), the gain is 90 cents per bushel of corn. At a conversion rate of 2.5 gallons of ethanol per bushel of corn, the benefit amounts to 36 cents per gallon of ethanol produced.

Therefore, 36 cents of the 54 cents tax credit per gallon of ethanol is offset by the use of set-aside land. The environmental and security benefits must then sum to 18 cents per gallon to have the benefits of additional ethanol exceed the costs. I believe that ethanol passes this test but quantifying these benefits is still too uncertain to be sure.

New Technologies to Reduce the Cost of Production

Several potential technological advances on the horizon will drive down the cost of producing biofuels considerably. At a recent conference in Peoria, scientists discussed many technological advances that would allow more efficient ethanol production. They concluded that, with a strong research effort, ethanol can be a cost-competitive source of fuel energy by the year 2000, even at current oil prices without the help of Government tax exemptions.

Working in cooperation with DOE, the National Science Foundation, universities and private industry, we plan to accelerate research on improving feedstocks and production technologies. Indeed, this past January USDA and DOE signed a Memorandum of Understanding to cooperate in the research and development of ethanol and other renewable fuels.

We anticipate further cooperation with scientists on research efforts. Some of the most important technological breakthroughs for ethanol include:

- o Improvements in ways to remove water from ethanol more efficiently, resulting in energy savings;
- o Innovations in ways to improve control of the fermentation process and increase ethanol yields;
- o Development of a bacterial replacement for yeast to reduce the fermentation time and the need to cool mash for fermentation; and
- o Conversion of hemicellulose and cellulose from corn hulls and portions of feed coproducts into ethanol--this advance could increase ethanol production capacity 16 percent without the additional use of corn or large capital additions to ethanol plants. Full conversion could raise ethanol yields to 2.9 gallons per bushel of corn.

Ethanol and ETBE -- Automobile Emissions Issues

Ethanol automobile emissions are another important research issue. I mentioned the uncertainties about environmental benefits earlier.

Ethanol has high octane. Its use reduces carbon monoxide emissions and atmospheric carbon dioxide contributions, although the ethanol blends commonly used have greater fuel volatility, which is its tendency to vaporize, and so may raise ozone levels. The jury is still out on this issue. USDA, in cooperation with the Environmental Protection Agency, DOE, state governments, and the ethanol industry, will facilitate testing to try to answer these questions.

A recent development, ETBE, made from ethanol, looks as if it may successfully address these issues. It has all of the desirable features of ethanol blends (e.g., high octane and low carbon monoxide (CO) pollution) and, in addition, is tolerant of water (normally present in fuel systems) and has lower fuel

volatility. ETBE can be handled like any petroleum product and will likely be more widely accepted by oil and automobile companies.

Economic Research Issues

About 95 percent of the ethanol produced in the United States is made from corn (319 million bushels in 1990), although it can be made from any feedstock containing cellulosic starch or fermentable sugar. We believe the potential of agricultural resources is great. Yield increases and use of acreage reduction program (ARP) land will provide the productive capacity to grow more corn for ethanol. In 1991, we have 20 million acres of land idled under annual commodity programs. These are acres that could be producing energy crops.

Seven million idled acres were of corn base. Had just this 7 million acres been in corn production, our corn crop would have been 800 million bushels larger. Put another way, this additional land could have provided feedstock for 2.0 billion gallons of ethanol--more than double our current ethanol production.

As a future consideration, the Conservation Reserve of over 35 million acres can potentially provide woody crops to convert to ethanol. In addition, there may be a possibility to convert about 49 million acres of non agricultural land to the production of woody feedstocks.

Vegetable Oils and Biodiesel

USDA and DOE also are looking at other alternative fuels from biomass. Specifically, we are developing vegetable oil substitutes for diesel fuels.

By modifying vegetable oil, through a process where ethanol or methanol is added in the presence of a catalyst, a restructured vegetable oil is formed that is nearly equivalent to diesel fuel.

In fact, this new product has some properties that make it superior to diesel. The restructured vegetable oil produces extremely low sulfur levels and sharply reduced emissions of solid particles. Moreover, current engine tests indicate that even a 15-percent blend of esterified vegetable oil will sharply reduce the visible black smoke and emissions plume from a diesel bus, truck or tractor.

This cleaner-burning esterified vegetable oil can replace diesel fuel or be blended with it. We have tractor engine tests approaching 4,000 hours of use on modified vegetable oil fuel. No engine damage has been found in these long-term tests.

Clearly all of these indicators are encouraging. However, we still must go through more rigorous engine testing before the full potential of this fuel can be determined.

Alternative Products

Biofuels are an important component of the Department's overall objective to conduct and fund research that develops new economically competitive agricultural products. A central theme in our effort is to use a renewable resource to produce a product that is environmentally safe.

Developing these products is more feasible now than at any time in history because of the tremendous growth in research methods, notably in biotechnology.

Examples of promising current and future research abound: Around 60 billion pounds of petro-chemical plastics are produced each year. One-time use packaging accounts for a third of that total production. USDA is looking at ways to make biodegradable plastic films for use as trash bags and bottles.

Soybean oil is being converted to specialty chemicals, such as substitutes for petroleum-based lubricants. In addition, USDA has developed patented technology for soybean-based newsprint ink, which can expand soybean use by 30 to 40 million bushels each year.

The United States imports over 60 percent (7 million tons) of its newsprint at an annual import cost of about \$4.5 billion. Kenaf, an annual nonwood fiber plant, provides an excellent fiber for newsprint and it can be grown right here.

USDA is developing ways to produce natural rubber from cereal starch and guayule, a rubber-producing perennial shrub native to the Southwest, could supply commercially competitive natural rubber domestically. These projects have strategic importance for the U.S. because we import all of our natural rubber, amounting to nearly 750,00 metric tons at a cost of about \$1 billion a year.

Erucic acid from rapeseed can be used in plastics manufacturing, transmission fluids and high-pressure lubricating oils. Historically, about three-fourths of the erucic acid used

in producing plastic films has been imported, yet Idaho has produced some rapeseed for 50 years. Other parts of the county can also produce vegetable oils that contain erucic acid. Crambe is an annual crop that produces oils with similar fatty acids that can complement rapeseed in substituting for imports and supply an expanding market. These crops require further agronomic development.

One hundred percent of castor oil, a strategic/critical material, is imported. The United States has the potential to produce castor or lisquerella competitively to replace the 70 million pounds imported annually at a cost of about \$35 million.

With the advent of biotechnology, we can take the genes from those crops synthesizing useful products and introduce the same genes into crops that are easier to grow. To illustrate, the tobacco plant is very easy to transform in a genetic engineering sense. The tobacco plant could be a source for producing non-toxic bio-veterinary, bio-pharmaceutical or biochemical specialty products.

The economic realization of new markets for agricultural products is exciting.

Summary

In closing, many opportunities exist to increase the Nation's use of agricultural and forestry products for energy and other alternative products, benefiting the environment and the farm economy. USDA intends to be a leader in seizing these opportunities. We welcome your cooperation, suggestions, assistance and support in this effort.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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Outlook '92

For Release: Tuesday, December 3, 1991

MATCHING USDA PROGRAMS WITH ENVIRONMENTAL NEEDS

James R. Moseley

Assistant Secretary for Natural Resources and Environment
U. S. Department of Agriculture

It is a pleasure to share a few thoughts with you about the USDA and environmental issues. As identified in the brochure, the title of my remarks is "Matching USDA Programs With Environmental Needs". Sometimes, when you're given a speech assignment months in advance and asked to give a title for your remarks, it's easy to approve the obvious. However, as this day drew nearer and I started to pull together my thoughts, I found some technical flaws as written.

First, I've noticed that in Washington, D.C., we tend to focus our attention, as the title implies, on "programs". I understand how this happens because it's how the system works -- it's how we convert budgets to action. Today, however, I want to talk beyond programs because programs are nothing more than a means to an end. In fact, the "policies" we create and the "practices" that are applied to the land by farmers and ranchers are what really makes the difference in addressing environmental issues.

Second, I think we should give consideration to our environmental needs. But addressing only environmental needs is neither the beginning, nor the end of all that must be considered. The point is often missed in our rush to resolve an environmental issue, that we must consider the economic part of the equation. Because when we neglect to look at the economic considerations, we severely undermine the opportunity for a realistic solution.

One of the most important things I have learned since I've been in government is that if we are going to protect our natural resources, we must have a policy framework that provides for both economic activity and environmental protection. We cannot exclude one from the other. For to do so we destine ourselves to failure.

So I want to expand my remarks today to how the USDA is providing the leadership to find the balance between our ecological and economic needs, and how we are assisting our producers to implement practices that are making a difference on the ground.

Before I get to policy, programs, and practices though, let me talk about something that is essential to the USDA approach. Our research, education, and technology transfer system is the foundation on which everything else we do is built.

It would be difficult for anyone to question that this approach has been the reason for our outstanding success in creating the most productive agricultural system in the world. When we've had a production problem, we've turned the creativity of our research people loose and let them experiment with their dreams to find the solution. As we look to address our environmental questions, this same discovery and technology transfer process will serve us just as well.

We have an impressive list of USDA programs that have a positive impact on the environment and our producer's economic bottom line. For example, the Conservation Reserve Program (CRP), perhaps one of the best illustrations from recent history, provides producers with income opportunities and also has tremendous positive environmental impact.

However, I think the real opportunity exists in identifying ideas that can improve resource protection and provide economic benefit above and beyond the traditional returns we receive in agriculture.

Assistant Secretary Gardner talked about ethanol production. I think we all understand the environmental benefit of using the oxygenated fuels in blends with gasoline. This program should and will be a USDA priority because of its positive environmental and economic impact.

But, I also hear our scientists now saying, we may have the opportunity to convert cellulose from biomass materials into alcohol fuels as well. This raises my level of enthusiasm even more because it means we may be able to use some lands that are not as well suited for producing grain for biomass energy production.

A couple of possibilities currently being researched at the USDA and the land-grant system, are a very fast growing hybrid poplar tree that has a superior capacity to capture solar energy; and switchgrass, a native prairie grass, that generates exceptional quantities of convertible biomass. These two plants give us the opportunity to protect soil and water resources, particularly the highly erodible soils, and also provide an income stream to farmers utilizing the land for its highest and best use.

Another example is tree planting on CRP land for long-term high value hardwoods production. We have nearly 36 million acres of primarily highly erodible land (HEL) land in the CRP and we know that starting in four years, some farmers are going to have to make some decisions about bringing this land back into production.

One option for producers is planting hardwood trees on this land. In spite of some very good economics for timber production on private lands, we've only planted about 2.3 million acres of CRP land to trees, most of which are softwoods. To encourage the planting of more hardwood trees, Congress included additional incentives in the 1990 Farm Bill including a provision allowing CRP contracts to be extended for five years if hardwood trees are planted.

I have a friend who planted 13 acres of hardwoods last spring on CRP. Recently, he told me it was the best economic decision he could have made for the land. He not only received a CRP payment, but also received USDA cost-share assistance to plant the trees. Based on current earnings from that land, if it were in grain production, the land was worth considerable more in current dollar adjusted value in 50 years, than if it were to remain in grain production. Again, it's the highest return and best use of the land and it provides a tremendous environmental benefit.

Another area is the wetland reserve program (WRP), a new part of the 1990 Farm Bill. The President has called for an extensive effort in wetland restoration in this country and a centerpiece of this effort will be WRP. There's \$46 million appropriated in the 1992 budget and the Administration will ask the Congress for more funding for 1993.

I believe an additional significant aspect of WRP is what we learn about wetland restoration and the potential economic benefit producers may be able to utilize by mitigating wetland conversions for urban economic development. It seems unlikely to me that a wetland will stand in the way of multi-million dollar metropolitan development project if government programs allow any kind of flexibility for replacing wetlands.

First, we have to become proficient and have reasonable proof that we can be successful at wetland restoration, and we're well on our way to understanding how to do this. But, once we know how to successfully restore wetlands, producers and developers will have the opportunity to meet not only our environmental goals, but our economic goals as well. A key point, however, is we must let the market determine the value of the exchange between rural landowner and urban developer, not the government.

I want to follow up on the point I made earlier about the relationship between USDA programs and producer implemented practices. Back at my alma mater, Purdue University, there's an ag economist, Dr. Dave Downey, who teaches agricultural sales and marketing. Posted on his door is an important message. You can't miss it as you walk in. The sign says, "If no one sells, a terrible thing happens...nothing."

That's exactly how I feel about matching USDA programs with our needs on the land. If we don't apply what we know; if we are unable to convert programs to practices, then again a terrible thing will happen -- nothing.

The good news is that's not what's going on. Instead, positive steps are taking place on the land that improve the producer's economic well-being and protect the resource. The bad news is the public is unaware it's happening.

For example, we're making significant progress on getting **conservation technology** on the ground. Clearly, some of this is occurring because of conservation compliance, but a lot of it is because farmers are learning that it makes good sense, both environmentally and economically.

When I converted to a ridge-till system on our farm in Indiana back in 1983, we cut our cost of production by 18 cents per bushel. That's a significant competitive edge we've had for the past 8 years. Our yields have continued to improve and we're improving the resource.

In my opinion, this technology can have as much impact as anything we can do at improving water quality in our streams and lakes. The concept's simple: keep the water on the land and you reduce the opportunity to move soil and nutrients to the drainage system. That's good for the natural resources, the producer, and the public.

Another "good news story" is input management. We're learning to become very specific out there on the farm in our testing techniques and application of agricultural inputs. I refer to it as site specific farming. Simply stated, we attempt to apply only what is required of a crop for production in that year and it's being done with greater precision than ever before.

This is especially important with nitrogen application because excess free nitrogen unused by the crop has the potential of moving off-site. Farmers are becoming very sensitive to this issue and recalibrating their nitrogen rates accordingly. What they're finding is yields stay up and costs go down -- it works economically.

A key point to remember is this production practice is being done voluntarily and rationally by producers, rather than by a superimposed regulation that says you must reduce rates by a certain percent in a given timeframe.

And finally, I think the most exciting news is that we are on the edge of technological breakthroughs that will allow for measurement of soil productivity and the ability to change input rates at the time and point of application.

We're linking computers to electronics, and now even to satellites. In the tractor cab when I do have the chance to plant crops at home, I sit in a electronic world. Around me are a variety of computers measuring ground speed; counting every seed I plant; changing herbicide and fertilizer rates to fit the need of the soil; determining field location, and measuring yields.

These technological breakthroughs, will increase productivity, reduce operating costs, and answer many of our environmental questions.

However, it's important to remember that all of this happens because of the solid partnership USDA has with farmers and ranchers of this country. We must be careful to make certain that every step the USDA takes reinforces this partnership. That's a critical goal at the Department. This partnership is clearly an issue of significant concern if the USDA is forced to move into a more regulatory mode and we find ourselves becoming the eco-cops for agriculture.

In closing, let me finish with a story. I don't think it was mentioned but I also have the pleasure of being a father to seven children. Now for those of you who are parents, you know how many questions a single child can ask. Multiply that by seven kids and I think you can begin to see that sometimes it's hard to give thoughtful answers to every question.

One day last summer when I was home, my eight-year-old son, Neal, and I were walking the fields to check out the crops since we had been going through the drought. And I will admit I was preoccupied with my own problems.

My son started asking questions. The first one he asked me, "Dad, when is it going to rain again?" I had to say "I don't know." We walked a little farther and then he asked me why God didn't make it rain? How do you answer that question? I said, "Neal, I don't know why." He then came back to me with, "Well, why can't the Secretary of Agriculture help us out. That's his job isn't it?" I said, "Neal, I don't know. Write him a letter and ask him." Finally, as we were nearing the house, my son asked, "Dad, I hope you don't mind my asking so many questions." "Of course not," I said. "How else are you going to learn?" Neal responded, "I don't know!"

As this story points out there are a lot of questions at USDA we're searching for answers. We're trying to adopt common-sense policies that encourage entrepreneurship; programs that stimulate the best technologies; and practices that protect both the resource and farmers economic well-being.

It's a system that is working and will continue to serve us well if we don't panic and over-react to the current pressure to "do something and do it right now!" From my perspective we are doing something. We're making excellent progress with science as our foundation and education as our guiding light. I thank you for your kind attention.

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ENVIRONMENTAL CHALLENGES AND OPPORTUNITIES

Otto Doering
Professor, Purdue University

American Agriculture's dilemma has been one of abundant production for many decades--a dilemma common to a number of industrial nations. Everyone has their own view and recommendations for dealing with our dilemma. For farmers it is a dilemma of increasing production and declining per unit returns. For those with special concerns about natural resources, the pessimist view is that our natural bounty is being degraded and wasted. The polar view is that safeguards are sufficient and that new technology will serve to allow ever increasing production--both here and abroad.

People like Lester Brown have been convinced for many years that the United States and the World are not using their resources wisely--that decline in innate agricultural productivity is being masked by chemicals and irrigation that are at best short term fixes. They see farmers not being able to keep up with the world's population growth. The result of this will be shortages of agricultural products and higher prices down the road as well as a decline in the well-being of people around the world.

Dennis Avery and the Hudson Institute are manning an opposing set of guns. They see the Lester Browns as modern day Chicken Littles. Their position is that the quality of productive resources is being effectively maintained and that new technology will allow increasing abundance at only modest cost increases--something of a Connecticut Yankee view of the world.

What these represent are two very different beliefs about the state of the world and the nature of our agricultural production system. These beliefs yield very different notions about what the future might be and what we have to do, or ought to do, as we plan for environmental challenges and opportunities. These positions are so far apart that my immediate reaction is to believe that truth must be somewhere in-between.

Farmers cannot find solace in either view. The pessimistic view posits increasing difficulty in getting nature to yield its bounty and greatly increased demand for food from those who will be poor and thus not able to pay for it. The optimistic view of increasing production posits low prices and waves of new technology which must be adopted to stay profitable--technology that seems to benefit the only first adopters and those with sufficient capital and volume to be at the forefront of the game.

For almost two decades American Secretaries of Agriculture have been threading their way through these opposing minefields trying to identify a path that makes sense. For an even longer period of time, American Secretaries of Agriculture have at some point in their tenure identified new products and new agricultural opportunities for American farmers as a potentially great benefit to the farming community and the nation. In truth, the record of success is modest in comparison to the impact of swings in world export markets. In addition, today's context for new product breakthroughs is very different from what it was years ago. An era of optimism for new product opportunities stretched from George Washington Carver's work opening an array of remarkable possibilities (Carver was the Thomas Edison of agriculture) to the early days at the Peoria Lab. Today, there is a very different context because new products, new opportunities, and farmers themselves are in the vise of the opposing views about resources, the environment, the suitability and safety of technology, and the future of agriculture. A good example of this is the concern over biotechnology--a technology that might have been accepted uncritically fifty years ago.

Where We Have Come From

We need to reflect a little about where we have been on this issue and how its present context is different today. We now look at some agricultural practices in less developed countries with horror over the destruction of natural systems and the degradation of soil resources. We did somewhat the same thing in this country as we moved west from the original settlements. Land was cleared, crops were planted on bare ground, soil was exhausted, and settlers moved on to new ground.

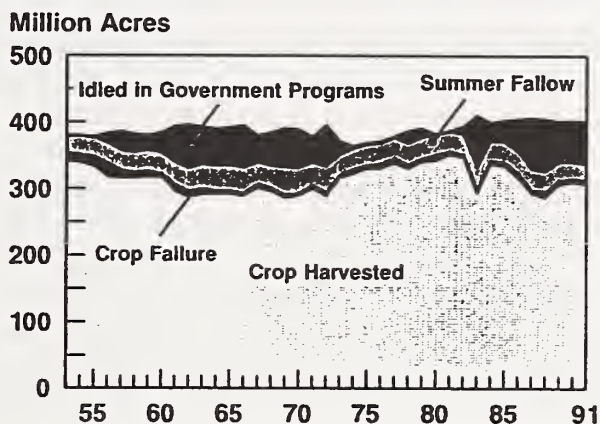
Slide Presentation--Changes in the Landscape.

With the Agricultural Adjustment Act of 1933, price enhancement and supply control measures were put in place to meet the needs of agriculture in depression since 1921. In 1936 the Supreme Court, in the *Hoosac Mills* decision, forced the Roosevelt administration to halt these direct measures and meet the need for income transfers to rural areas and supply management partially through conservation programs that idled fragile lands. Had this not been the case we probably would not have enhanced and preserved our cropland to the extent we did.

Programs like the soil bank during the Eisenhower administration were continuations of this. It is in the 1950s and 60s that we shaped the agricultural landscape as we know it today.

As demand for products has grown we have cultivated the marginal lands, and as demand falls, government programs have given farmers income transfers to allow them to idle such acres. This occurs across a wide range of land qualities. Sometimes this moving in and out of marginal land is counterproductive and wasteful. This shift of land at the margin is illustrated by the figure below.

Major Uses of U.S. Cropland



We had a costly example of this problem in the 1970s. With the sudden expansion of agricultural demand and the elimination of set aside and conserving use programs, land came into production which probably should not have been cultivated. One case was the sod-busting land speculation that occurred in parts of Colorado--greatly encouraged by a generous crop disaster program--which allowed both land converters and farmers to do well selling newly created wheat land and farming the program when little wheat was successfully grown. But for the high prices and the crop disaster program, this land probably would have stayed in grass. Once in crops, something like the conservation reserve program was necessary to get it back into grass. You, I, and the general public paid to have the sod busted and we paid to have the land resodded. This is something we should be wise enough to avoid in the future, and it sets limits on the extent to which we should push at the frontiers of our resources.

Resources for New Uses and New Crops

Over the years American agriculture has had tremendous opportunities because we have been land rich and farmed our land extensively. We first settled the land with a sparse population. Then jobs in industry grew more attractive than jobs in farming. In the U.S. labor has been the critical limiting resource in our agricultural production and any inputs; chemicals,

energy, and machinery that substituted for costly labor have been widely utilized. Our technology has thus been directed towards enhancing labor productivity. Herbicides not only control weeds but also save labor. Countries like Japan, on the other hand, have created and adopted technology that enhances the productivity of their scarce resource, land.

Our crops have been grown within these resource bounds and technology paths. When demand for them in traditional uses declines, then there is a push for new products. George Washington Carver's work not only stressed expanded new uses for existing crops, but also addressed critical needs to change the cropping systems in the south and try to halt and even reclaim the damage wrought by overplanting of cotton and other soil depleting crops by planting legumes. His effort was doubly remarkable in this respect.

This is in contrast to some of the more exotic "opportunity" crops ranging from Jerusalem artichokes to weird crops like Jojoba. Such crops are often touted to solve major national needs--sometimes having a similarity to Al Capp's Shmoo.

At one point during the energy crisis of the 1970s the Jojoba was touted as mother nature's own petrochemical industry. Here was a plant that grew wild in the desert (thus requiring no water and no fertilizer) yet produced a sap that was a petrochemical substitute. This caused an initial funding frenzy in the Department of Energy and, I hope by now, a realization that Jojoba is not the low cost miracle some thought it to be. Only a relatively small number of exotic crops have become technical and commercial successes while also providing substantial income opportunities for more than a small number of farmers.

The Romance of and Expectations for Alcohol Fuels

The major problem with alcohol fuels has not been their performance, it has been unrealistic and unmet expectations. In the 1970s, every farmer was going to become wealthy and contribute to the nation by having an alcohol plant on the farm. This was followed by the DOE program of alcohol facility loans, which were certainly not an unqualified success. Both represent unrealized expectations about profitability and opportunities for small and moderately scaled operations. The successful reality is a demand for corn by large wet-milling operations who can integrate alcohol into their other product lines and do well selling large volumes of a very basic commodity. For farmers ethanol provides a growing stable demand for corn. However, it has not raised corn prices to the levels Indiana farmers would like. In a sense, ethanol is a basic commodity--even when used as an octane extender. It suffers the same low margins and price variability as other basic commodities.

Alcohol, like other "new uses," is subject to the hype from both proponents and opponents. We have this tendency to take selected engineering data and drive it to its illogical conclusion--painting scenarios of feast or famine that common sense should tell us will never occur.

David Pimentel takes up one side and points out that "making ethanol from corn is an unproductive process, one that would increase degradation of agricultural land and water and pollute the environment while burning a human food resource at a time when 30% of the world population is malnourished." Indulging in a pre-emptive strike, Pimentel also points out that running all the cars in the U.S. on ethanol from corn would require more than 2 billion acres of cropland in corn--five times our basic cropland area of 400 million acres. Alcohol advocates may well respond that Pimentel underestimated yields and only 1.7 billion acres would be needed. However, we are not going to run the nation's cars on ethanol, so why fight this battle.

Nor are we going to accomplish this with methanol. Much of the push for methanol results from the belief that this is a renewable fuel. It can be made from cellulosic materials (wood alcohol). However, the methanol used in the vehicles required under the national energy plan will come from natural gas--this is the cheap way to get it. We will be using up our natural gas resources to run autos in the belief we are being "green."

Today we have extremely strong economic incentives not to use ethanol from corn, methanol from wood or ethanol from cellulose as fuels. We have a national policy of keeping the price of petroleum fuels as low as possible. The price of gasoline today in real dollars is not much higher than it was in the 1960s. Today, there is no more economic incentive to use and produce ethanol or fuel oils from agriculture than there was in the 1960s. But for the federal fuel efficiency standards, there is no economic incentive today for fuel efficiency in automobiles any greater than existed at the time of the first oil embargo. Nor is there an economic incentive for consumers to use less gasoline than they did before the oil embargo--and they are not.

How do we plan for the future when any development or use of alternative fuels will have to be subsidized as long as we continue a cheap petroleum policy. These fuels are simply more expensive than petroleum at today's bargain prices. As we go up the alternative fuels cost ladder to ethanol from cellulose, we begin to approach the costs of shale oil and liquids from coal. This is partially because of other competing uses for agricultural products and because the land base is limited. Thus, there is a point at which the agricultural fuel feedstock becomes increasingly expensive to produce. Reality for the future is a mix of liquid fuel sources from petroleum, from agriculture, from shale, and from coal.

Using Common Sense in Looking at Challenges and Opportunities

We have what has been a stable resource base of productive cropland. We can apply even more technology to increase the productivity of that land. However, we have very real concerns today about environmental impacts which will limit the kind of technology we apply to our land base. We will not be able to take advantage of the full cornucopia of technology that Avery appears to assume in his optimistic viewpoint about our productivity. On the other hand we may well be able to increase our productivity beyond the limits seen by Lester Brown

without degrading the resource base and penalizing future generations. Finally, we do not have to push new uses of agricultural products to the illogical extremes of resource use that become Pimentel's Trojan horses. We do have to use common sense. We have to start thinking today about what to do with the grassland in Colorado when the Conservation Reserve Contracts expire.

Can we find new products and new uses for old products? We can and we are doing so. Can we do this in ways that both enhance environmental quality and benefit farmers? That is a more difficult question.

We can expand the use of old and new products moderately while still meeting necessary environmental constraints. The Office of Technology Assessment reviewed this issue for agriculture with respect to producing energy and potential chemical feedstocks from grain and biomass at the end of the 1970s. The report concluded we could do things like take a certain amount of crop residues from the land under conditions that would not result in excessive erosion. It also investigated the opportunities for obtaining cellulosic materials from grasses and other cover crops, as well as the potential for utilizing more conventional grain crops for alcohol production. In a common sense and balanced way these things can be done in moderation, providing both opportunities and sufficient environmental protection. We can certainly expand uses for traditional agricultural products as a cushion against changing world demand.

We can meet environmental challenges and maintain opportunities for agriculture, but the most difficult question is how does this relate to farm income.

With ethanol, farmers are in an iron ring. The bulk of the cost of ethanol is the corn feedstock. Farmers desire more ethanol production to raise the price of corn. Increased corn prices increase the cost of ethanol, which is already above the cost of petroleum substitutes and thus requires government subsidies. High corn prices bankrupt ethanol producers. Ethanol production also depends upon being able to market the protein produced as a by-product. We currently sell much of this to Europe. If that market is cut off or we expand our ethanol production beyond the demands for such protein, the value of this credit drops, effectively increasing the cost of producing ethanol. Such a situation would lower protein prices generally. Soybean farmers in the Midwest can grow more corn, but soybean farmers in the Delta face different choices. There are trade-offs here we are going to have to deal with.

We have used agricultural products to replace other materials and have improved environmental quality. Mike Ladisch's technique of using cracked corn to replace the benzene process for dehydrating alcohol not only saves Archer Daniels Midland a substantial amount of money, but also reduces the potential exposure of workers and others to the benzene traditionally used in this process. Unfortunately the process does not increase the total demand for corn very much. This new use is of great benefit, but doesn't help farmers directly.

Farmers are still price takers for basic commodities and can exercise little market power in setting those prices. New uses for agricultural products and new products themselves appear to have allowed farmers to just hold their own in a world where those who can afford to purchase commodities have adequate supplies to choose from.

The challenge is how to develop new opportunities for agriculture in a way that meets environmental requirements, and be able to do this so as to effectively increase the demand for and the price of agricultural products. This is going to be extremely difficult when the prices for the plastics, chemicals, and liquid fuels we would like to compete against remain so low.

Are we to just sit and do nothing? My view is that if we do not work hard at developing new uses and new products we will have reduced demand for our products relative to what we produce.

There are opportunities. We should be able to meet the environmental challenges with common sense. We should also be able to deliver products that are more environmentally benign than many used today and, at a minimum, maintain demand for our products. These are not a bad set of accomplishments in and of themselves.

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URUGUAY ROUND OPPORTUNITIES*

Ambassador Carla A. Hills
United States Trade Representative

INTRODUCTION

ACCORDING TO THE 200TH ANNIVERSARY EDITION OF THE OLD FARMER'S ALMANAC, THE TUTTLES OF DOVER, NEW HAMPSHIRE, OWN AND OPERATE AMERICA'S OLDEST FAMILY FARM.

THE TUTTLE FAMILY HAS CONTINUOUSLY FARMED THEIR 245 ACRES OF RICH RIVER-BOTTOM SOIL SINCE 1632.

A LOT HAS CHANGED IN EIGHT GENERATIONS: SOPHISTICATED DEVICES CAN TEST ELECTRONICALLY THE SWEETNESS OF MELONS AND LASERS BEAMED AT CATTLE FODDER MAKE IT MORE DIGESTIBLE AND BOOST WEIGHT GAINS IN CATTLE.

BUT WHILE TECHNOLOGY MAY INCREASE PRODUCTIVITY AND IMPROVE QUALITY, EVERY YEAR AT HARVEST TIME THE FARMER MUST ASK THE SAME QUESTION: "WHERE CAN I SELL MY PRODUCT FOR THE HIGHEST PRICE?"

THE BUSH ADMINISTRATION IS WORKING HARD TO MAKE SURE THAT THE AMERICAN FARMER HAS OPPORTUNITIES IN MARKETS ALL AROUND THE WORLD, AND GETS A FAIR PRICE DETERMINED BY MARKET FORCES, NOT GOVERNMENT INTERVENTION.

I BELIEVE PRESIDENT BUSH'S RECORD OF ADVANCING AGRICULTURAL TRADE IS UNPARALLELED. LET ME NAME JUST A FEW OF HIS ACHIEVEMENTS IN THE PAST 30 MONTHS:

- O THE PRESIDENT ISSUED A JACKSON-VANIK WAIVER FOR THE SOVIET UNION LAST DECEMBER, PERMITTING THE EXTENSION OF U.S. GOVERNMENT AGRICULTURAL CREDITS.
- O WE CONCLUDED AN AGREEMENT WITH KOREA WHICH PROVIDES FOR MINIMUM ANNUAL ACCESS LEVELS FOR BEEF ALONG WITH SIMULTANEOUS BUY/SELL PROVISIONS.

*As delivered

- O WE OBTAINED A FAVORABLE RULING FROM A GATT PANEL WHEN THE EUROPEAN COMMUNITY CHALLENGED U.S. IMPORT RESTRICTIONS UNDER SECTION 22 OF THE AGRICULTURAL ADJUSTMENT ACT.
- O WE SUCCESSFULLY NEGOTIATED AN EXTENSION OF AN AGREEMENT WITH THE EUROPEAN COMMUNITY PERMITTING THE ENTRY OF MORE THAN 2 MILLION TONS OF CORN AND SORGHUM IN 1991 AND 1992.
- O WE PERSUADED FINLAND TO REPLACE ITS APPLE AND PEAR IMPORT BAN WITH TARIFFS.
- O AND, THIS YEAR CANADIAN IMPORT LICENSES FOR WHEAT AND WHEAT-CONTAINING PRODUCTS, WHICH HAVE FOR MANY YEARS FRUSTRATED POTENTIAL U.S. EXPORTERS WERE ELIMINATED.

URUGUAY ROUND UPDATE

BUT WHAT I AM MOST SATISFIED ABOUT IS OUR PRINCIPLED STANCE ON AGRICULTURE IN THE URUGUAY ROUND OF GLOBAL TRADE TALKS.

BECAUSE WE WERE FIRM ON INSISTING ON REAL REFORM OF AGRICULTURAL TRADE AT BRUSSELS MINISTERIAL LAST DECEMBER, AND IN THE MONTHS SINCE, WE NOW HAVE A CHANCE FOR AN AGREEMENT THAT WILL BE GOOD FOR U.S. FARMERS.

WHAT HAPPENED IN THE YEAR SINCE THE BRUSSELS MEETING IS THAT THE VERY COUNTRIES THAT BROUGHT THE TALKS TO A HALT HAVE RESOLVED TO REFORM THEIR AGRICULTURAL POLICIES.

FINALLY WE ARE TALKING ABOUT CUTTING EXPORT SUBSIDIES THAT HAVE SO DEPRESSED WORLD MARKET PRICES, AND WE ARE TALKING ABOUT CUTTING BARRIERS TO MARKET ACCESS THAT HAVE LIMITED EXPORT OPPORTUNITIES. FOR THE UNITED STATES, AGRICULTURE IS IMPORTANT BECAUSE IT IS OUR NUMBER 1 EXPORT.

FAIRER COMPETITION AND MORE OPEN MARKETS WILL BENEFIT AMERICAN FARMERS WHO LEAD THE WORLD WITH MORE THAN \$40 BILLION IN ANNUAL EXPORTS, WHICH IS ABOUT A THIRD OF THE TOTAL VALUE OF U.S. FARM PRODUCTION. THE USDA HAS ESTIMATED THAT A SUCCESSFUL URUGUAY ROUND AGREEMENT WOULD EXPAND U.S. AGRICULTURAL EXPORTS BY \$6-\$8 BILLION OVER THE NEXT 5 YEARS AND ADD \$1-\$2 BILLION TO FARM INCOME.

GIVEN OUR ABUNDANT NATURAL RESOURCES AND OUR SUPERIOR HUMAN AND TECHNOLOGICAL RESOURCES, WE KNOW THAT THE U.S. FARMER IS THE MOST PRODUCTIVE IN THE WORLD. A FREER AND FAIRER TRADING SYSTEM WILL ENABLE U.S. PRODUCERS TO MAXIMIZE THAT COMPARATIVE ADVANTAGE.

IS AN AGREEMENT AT HAND?

THERE IS NO DOUBT: THE BENEFITS OF A SUCCESSFUL URUGUAY ROUND COULD BE SUBSTANTIAL FOR OUR FARM COMMUNITY. BUT, NEARLY A YEAR AFTER THE IMPASSE IN BRUSSELS, THE QUESTION EVERYONE IS ASKING IS, "WILL THERE BE A URUGUAY ROUND AGREEMENT?"

I AM HOPEFUL. RECENTLY, THERE HAVE BEEN SOME ENCOURAGING SIGNS:

- IN EARLY OCTOBER, GATT DIRECTOR GENERAL ARTHUR DUNKEL ANNOUNCED A BOLD PLAN TO GALVANIZE THE NEGOTIATIONS. HE ORDERED THE CHAIRMEN OF THE KEY NEGOTIATING GROUPS TO CONVENE IMMEDIATELY. IF THEY COULD NOT REACH AGREEMENT, MR. DUNKEL SAID HE WOULD PROPOSE SOLUTIONS FOR THE OUTSTANDING ISSUES IN A PAPER HE WOULD ISSUE.
- ON OCTOBER 15, GERMAN TRADE MINISTER MOELLEMANN ANNOUNCED AT AN EC TRADE MINISTERS' MEETING AT THE HAGUE, THAT GERMANY HAS SHIFTED ITS POSITION AND WAS NOW PREPARED TO NEGOTIATE IN THE THREE AREAS REQUIRED FOR REFORM OF WORLD AGRICULTURE.
- THREE WEEKS AGO, PRESIDENT BUSH OBTAINED AGREEMENT FROM EC PRESIDENT DELORS TO DEVOTE THEIR ANNUAL U.S.-EC SUMMIT MEETING TO THE URUGUAY ROUND. THEY HAD GOOD DISCUSSIONS, AND SOME DIFFERENCES WERE BRIDGED. NEGOTIATORS WERE DISPATCHED TO GENEVA TO WORK ON THE ISSUES REMAINING, BRINGING IN OTHER GATT MEMBERS. BOTH LEADERS STATED THEY WOULD INTERVENE AS AND WHEN NECESSARY.

I CAN ASSURE YOU THAT THE U.S. IS DOING EVERYTHING IN ITS POWER TO PUSH THESE NEGOTIATIONS TO A SUCCESSFUL CONCLUSION. WE ARE ABSOLUTELY CONVINCED THAT THE URUGUAY ROUND IS THE VERY BEST MEANS TO MODERNIZE AND STRENGTHEN THE GLOBAL TRADING SYSTEM AND TO PUT US ON THE PATH TO GREATER GLOBAL PROSPERITY.

BILATERAL AND REGIONAL INITIATIVES

AS WE WORK TO ACHIEVE A SUCCESSFUL OUTCOME OF THE URUGUAY ROUND, WE CONTINUE TO PRESS FOR OPEN MARKETS IN EVERY FORUM AVAILABLE TO US.

A MAJOR OPPORTUNITY CLOSE TO HOME IS OUR EFFORT TO NEGOTIATE A NORTH AMERICAN FREE TRADE AGREEMENT. LINKING THE COMPLEMENTARY ECONOMIES OF CANADA, OUR FIRST LARGEST TRADING PARTNER, AND MEXICO, OUR THIRD LARGEST TRADING PARTNER, WITH OUR OWN WOULD CREATED ONE OF THE LARGEST AND RICHEST MARKETS IN THE WORLD WITH 360 MILLION PRODUCERS AND CONSUMERS, AND \$6 TRILLION IN ANNUAL OUTPUT.

ALREADY WE HAVE SEEN THE BENEFITS OF LIBERALIZING TRADE WITH MEXICO. IN 1986, WHEN MEXICO JOINED THE GATT AND REDUCED ITS TARIFFS FROM 100 PERCENT TO A HIGH OF 20 PERCENT, U.S. EXPORTS TO MEXICO MORE THAN DOUBLED FROM \$12 TO \$28 BILLION.

THAT DOUBLING OF U.S. EXPORTS CREATED 320,000 U.S. JOBS AND EVERY \$1 BILLION INCREASE IN U.S. EXPORTS GENERATES AROUND 20,000 ADDITIONAL JOBS.

TODAY OUR EXPORTS TO MEXICO ARE GROWING TWICE AS FAST AS COMPARED WITH OUR EXPORTS TO THE REST OF THE WORLD. MEXICO CURRENTLY BUYS FULLY 35 PERCENT MORE PER PERSON FROM US THAN DOES THE FAR MORE AFFLUENT EC.

AN FTA IN NORTH AMERICA WOULD NOT ONLY LOCK IN THESE GAINS, IT WOULD CREATED NEW MARKET OPENINGS FOR U.S. BUSINESS AND AGRICULTURE. FOR MEXICAN TARIFFS ARE STILL 250 PERCENT HIGHER THAN OURS. IF WE CAN BRING THEM DOWN FURTHER AND DISMANTLE MEXICO'S IMPORT LICENSING AND ITS EXPORT PERFORMANCE REGULATIONS, WE WILL IMPROVE ACCESS TO A MARKET PROJECTED TO HAVE 100 MILLION CONSUMERS BY THE YEAR 2000.

FOR U.S. FARMERS THIS WOULD PROVIDE:

- O A SUBSTANTIAL EXPANSION OF U.S. EXPORT OPPORTUNITIES TO OUR FOURTH LARGEST AGRICULTURAL TRADING PARTNER.
- O THE DISMANTLING OF MEXICO'S RESTRICTIVE IMPORT LICENSING SYSTEM WHICH APPLIES TO ABOUT 40 PERCENT OF THE VALUE OF U.S. AGRICULTURAL EXPORTS TO MEXICO INCLUDING GRAINS, DAIRY PRODUCTS, AND CERTAIN FRUITS AND VEGETABLES. THESE LICENSES ARE GRANTED OR WITHHELD IN AN ARBITRARY MANNER AND OFTEN ACT AS IMPORT BANS.
- O A NORTH AMERICAN FREE TRADE AGREEMENT WOULD PLACE THE UNITED STATES SQUARELY IN THE MIDDLE OF A CONTINENTAL MARKET WITH A COMBINED OUTPUT 25 PERCENT LARGER THAN THE 12-COUNTRY EUROPEAN COMMUNITY.

IN AGRICULTURE, THE U.S. SECTORS THAT WOULD LIKELY REAP THE BIGGEST BENEFITS FROM FREER TRADE WITH MEXICO WOULD BE GRAINS, OILSEEDS, LIVESTOCK AND LIVESTOCK PRODUCTS, AND HORTICULTURAL PRODUCTS LIKE APPLES, PEARS, AND TREE NUTS.

WE ARE NEGOTIATING A LONG IMPLEMENTATION PERIOD, PLUS SAFEGUARD ARRANGEMENTS TO MODERATE PRICE PRESSURES ON THOSE SECTORS THAT WILL FACE INCREASED COMPETITION.

A FREE TRADE AGREEMENT WILL ENSURE THAT U.S. FARMERS WILL HAVE THE OPPORTUNITY TO SUPPLY MEXICO'S FOOD NEEDS WHICH ARE PROJECTED TO INCREASE SUBSTANTIALLY FOR A NUMBER OF REASONS:

- MEXICO'S POPULATION CURRENTLY NUMBERS ABOUT 83 MILLION WITH AN AVERAGE AGE THAT IS 10 YEARS YOUNGER THAN OUR POPULATION, AND A GROWTH RATE CONSIDERABLY HIGHER THAN OURS.
- DEMAND FOR FOOD IS EXPECTED TO STRENGTHEN, PERHAPS BY 5 TO 6 PERCENT ANNUALLY, DURING THE 1990'S, AS ITS POPULATION GROWS, AND INCOMES CONTINUE TO RISE. DEMAND IS LIKELY TO BE PARTICULARLY STRONG FOR ANIMAL PROTEINS (MEAT, EGGS AND DAIRY PRODUCTS) AND PROCESSED FOODS.
- MEXICO'S LIMITED ARABLE LAND AND WATER SUPPLIES WILL REQUIRE INCREASED IMPORTS OF FOOD AND FEEDSTUFFS TO KEEP PACE WITH ITS EXPANDING DEMAND. MEXICO HAS ABOUT 7/10THS OF AN ACRE OF ARABLE LAND PER PERSON, COMPARED TO NEARLY 2 PER PERSON FOR THE UNITED STATES.
- WITH TRADE BARRIERS KEPT DOWN BY A FREE TRADE AGREEMENT, U.S. PRODUCERS WILL BE ABLE TO COMPETE FOR AN INCREASING SHARE OF THE NORTH AMERICAN MARKET.

ALL THREE GOVERNMENTS INVOLVED IN THE NAFTA DISCUSSIONS ARE ANXIOUS TO CONCLUDE AN AGREEMENT AS SOON AS POSSIBLE TO BEGIN REAPING THE ECONOMIC BENEFITS WHICH WOULD BE GENERATED BY SUCH AN ARRANGEMENT. HOWEVER, ALL ARE FIRMLY COMMITTED TO ACHIEVING A GOOD AGREEMENT AND TO TAKING WHATEVER TIME IS NECESSARY TO SECURE THAT RESULT.

CONCLUSION

A LOT HAS CHANGED IN AGRICULTURE SINCE THE TUTTLES BEGAN FARMING IN NEW HAMPSHIRE ALMOST 360 YEARS AGO. THEY PLANTED SEEDS BY HAND, AND TURNED THE SOIL WITH HORSE-DRAWN PLOWS.

FARMING TODAY REQUIRES KNOWLEDGE AND EXPERTISE UNIMAGINABLE TWO CENTURIES AGO. IT IS A GLOBAL ENTERPRISE COMPLICATED BY GEOPOLITICS.

YET, THE BASIC ECONOMIC QUESTION REMAINS: WHERE CAN YOU SELL YOUR PRODUCT FOR THE BEST PRICE?

YOU CAN COUNT ON THIS ADMINISTRATION TO CONTINUE TO WORK FOR THE AMERICAN FARMER BY PRESSING TO OPEN NEW MARKETS AND TO EXPAND EXISTING ONES.

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ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture

Washington, D.C. 20250-3900



Outlook '92

For Release: Tuesday, December 3, 1991

THE MAKING OF THE 1990 FARM BILL

Keith Bjerke
Administrator, Agricultural Stabilization
and Conservation Service

On November 28, 1990, President George Bush signed into law as PL 101-624 the final version of S 2830, the Food, Agriculture, Conservation and Trade Act of 1990, now generally referred to as the FACT Act, which would give legal direction to American agricultural policy for the next five years.

In its printed form the FACT Act is a bulky document, 1 inch thick, with its 719 pages of fine print weighing right at 2 pounds. To reach this point, where the presidential signature marked what I feel should be called "The End of the Beginning," had taken uncounted hours of work by, again, uncounted men and women in the Legislative and Executive branches of the Federal Government. And we cannot fail to include the equally strenuous efforts put forth by those organizations in the private sector that reflect the thoughts and interests of American agriculture. They were an integral part of this process as, indeed, they not only had every right to be but were actively encouraged to be by both the Congress and the Department of Agriculture.

I said this marked "The End of the Beginning". I don't think I have to elaborate as to why enactment into law is only a beginning. For instance, in spite of the careful, precise work that went into crafting the FACT Act of 1990, we now have a 250 page technical corrections bill, passed Congress on 26 November, 1991. Everyone here is well aware that getting a bill passed is one thing. Administering what is in the law is something else again. So, signature into law ended the beginning. And it is this "beginning" I'd like to discuss with you today.

It is impossible to set a precise date on which "Work on the '90 farm bill began." Oh, sure, one could say it began the date the '85 farm bill was signed into law and they probably would be quite close to right!

For the Department of Agriculture I can give a date of sorts -- namely February 1990, when the Department's "Green Book" entitled 1990 Farm Bill -- Proposal of the Administration, was released. But even that date is misleading; let me quote from the Foreword of the "Green Book":

"...We had innumerable consultations...Our preparations have included dialogue...plus indepth discussions...A great deal of work and thought has gone into these proposals..."

Note what I stressed -- all past tense. The point I am trying to make is that the Green Book, with its 147 pages consisting of 11 separate headings and 81 subtopics, was definitely not a document that had been hastily put together or without a lot of input from all sources.

USDA's agencies had their own fields of responsibility not only for preparation of the Green Book and the Administration's proposals but to continue, afterwards, to work with the Congress on legislation taking shape on Capitol Hill.

In the Agricultural Stabilization and Conservation Service, Farm Bill teams were organized to cover topics that by their very nature would be separate line-item parts of new farm legislation. Much care was taken in team formation; the area could not be too broad or it would overlap and lead to needless duplication with other teams. Neither could it be too narrow, or some important aspect of the topic might be left out. This process started in the summer of 1989.

Each team had a leader and a project manager. They were composed of the specialists/analysts whose expertise pertained to the field of the team. Most members were from ASCS, but by no means all. For example, the Conservation Team had members from ASCS, the Extension Service, Forest Service, Soil Conservation Service and Office of Budget and Program Analysis. From outside USDA there were representatives of the Office of Management and Budget, Fish and Wildlife Service and the Environmental Protection Agency. The Dairy Team, in addition to ASCS specialists, had others from the Agricultural Marketing Service, Foreign Agricultural Service and the Economic Research Service.

This team structure stayed in place and in operation through 1990 when Congress was in the actual process of writing farm legislation, as the Department continued working with the Congress. If anything, the demands on these people's time and skills and expertise became even greater. It is demanding enough to prepare the Administration's proposals. It is even more demanding when these same persons work with the Congress to reconcile conflicting points of view and objectives.

As you can imagine, this was a very heavy extra professional

burden. We did not have the luxury of taking on these added responsibilities in a vacuum to the exclusion of all else. Work had to continue on our day-to-day operations required under the 1985 farm law.

For an assessment as to how it all came out in the end, I would cite USDA's letter to Richard Darman, Director of the Office of Management and Budget, written on October 31, 1990, recommending presidential approval of S 2830 as passed by the Congress:

"...The bill is the result of many months of negotiation and debate between the Administration and the Congress. The bill represents a compromise that tries to balance divergent and conflicting interests. ...The bill was written under extremely difficult and complex circumstances... On balance, we believe that an acceptable outcome has been achieved. ..."

Earlier I noted that enactment into law is only the beginning. Most people understand we just could not take all 719 pages and 2 pounds of the FACT Act and wave it at American agriculture and say "Here it is!" With that, I have taken you through the "beginning" process and I want to go just a bit further.

Planning for implementation began in early 1990. Never before had ASCS been required to update an automated system and have it ready to sign up producers on Day One of a new farm bill. We would also be required to execute a formal rule-making process that would allow public comment on the rules and regulations. These final rules would need to be published before the end of sign up in 1991.

An automated tracking system was developed by ASCS to assist in the management of the implementation and extensive training was carried out on its use. Concurrent with the tracking system training was the introduction of a new methodology called structured writing. This writing skill improvement may well go down as the single biggest factor in the success of the implementation process. The FACT Act implementation teams, all chaired by ASCS personnel, used structured writing skills exclusively in the preparation of over 500 decision memos that worked their way through USDA before Christmas, 1990, so that rules, regulations and handbooks could be developed prior to sign up in March 1991. All of the handbooks and training materials were also developed using the structured writing methodology. Structured writing removes ambiguity and redundancy and places the workload on the writer instead of on the reader for interpretation. One tongue-in-cheek complaint I received from a county executive director is that the new rules are too hard to misinterpret.

Bringing the agencies together in the implementation process has

had several positive spinoffs in 1991. First of all, it was obvious from the start that a special effort to educate the farmer customer on the new FACT Act would be a major undertaking. Since ASCS would be fully employed in its own preparation and training, it was agreed that the Extension Service would take the lead in customer education. The farm press was also very patient and waited for correct information as it was developed so that everyone presented a consistent, accurate picture of options that were available. The farmers needed to spend quality time making individual economic analysis to prepare for signup. Now, as we look to the future, the ability for each producer to design their own best program will be even better understood.

Thank you for this opportunity to discuss the 1990 Farm Bill implementation process with you. I look forward to your questions.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
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Outlook '92

For Release: Tuesday, December 3, 1991

HOW IS THE FARM BILL WORKING (PLANTING FLEXIBILITY OPPORTUNITIES)

Bruce R. "Randy" Weber
Acting Assistant Deputy Administrator,
Program Planning and Development (DAPPD)
Agricultural Stabilization and Conservation Service (ASCS)

The Food, Agriculture, Conservation and Trade Act of 1990 (the 1990 Act) was signed into law by President Bush (November 28, 1991) during last year's Outlook '91 Conference. At that time I reviewed with you how the 1990 Farm Bill had evolved. Today, one year later we can look back as well as forward, to assess how well the farm bill is working. The answer is in the "eyes of the beholder" but I believe it is working well and will continue to chart American agricultural policy for years to come on a market-oriented path. We all very much want to see a meaningful GATT agreement to bring about a level playing field for U.S. and international agriculture. This now seems more attainable than a few months ago. We generally have a competitive advantage in most segments of agriculture and have an industry ready and willing to meet the challenge that a market-oriented international trade environment offers. The 1990 Act goes along way toward giving U.S. farmers the ability to meet these challenges. There will be obstacles along the way but it seems that an appropriate direction is being followed. One of the less desirable obstacles has been "mother nature." She has not treated U.S. agriculture well in the past several years. This year is a good example, we went from excessive moisture early this spring in numerous regions of the U.S. to the driest summer on record in parts of the same regions. This has not helped a sector that is still suffering from burdensome debt. Although the situation has improved markedly since the mid-1980's further improvement is necessary. This will take time and perseverance. However, emerging events such as the remarkable changes in the USSR, and Eastern Europe; the improving prospects for a successful GATT; and a general easing of worldwide tensions, all point to an improving agricultural picture. The 1990 Act provides the framework to meet the agricultural needs of an improving international situation. Today I want to talk about one important aspect of the 1990 Act; PLANTING FLEXIBILITY.

Definition of "Planting Flexibility"

Generally, I believe most think of flexibility, in the context of the 1990 Act, as permitting producers to plant up to 25 percent of the crop acreage base to crops other than the program crop. Otherwise known as the triple base concept. Although this change is a hallmark of the 1990 Act, today I want to expand that thought and show you the many other facets of planting flexibility opportunities within the 1990 Act. They are:

1. Planting Flexibility (NFA/OFA)
2. 0/92 Program (Wheat/Feed Grains)
3. Zero Certification
4. No Cross Compliance
5. Base Building (Program Noncompliance)
6. Ghost Acres (Failed/Prevented Plantings)
7. Integrated Farm Management Program

There are other discretionary planting flexibility opportunities such as the targeted option payment (TOP) program, planting of designated crops on up to half of the reduced acreage (known as ACR) and the special oats planting provisions (applies to wheat and feed grains only). These programs were not implemented for the 1991 crop but could be put in place in the future.

The Congress has also been debating a technical corrections bill for the better part of this year. This legislation is still pending but it expected to become law. Additional planting flexibility opportunities are contained in the bill. They are:

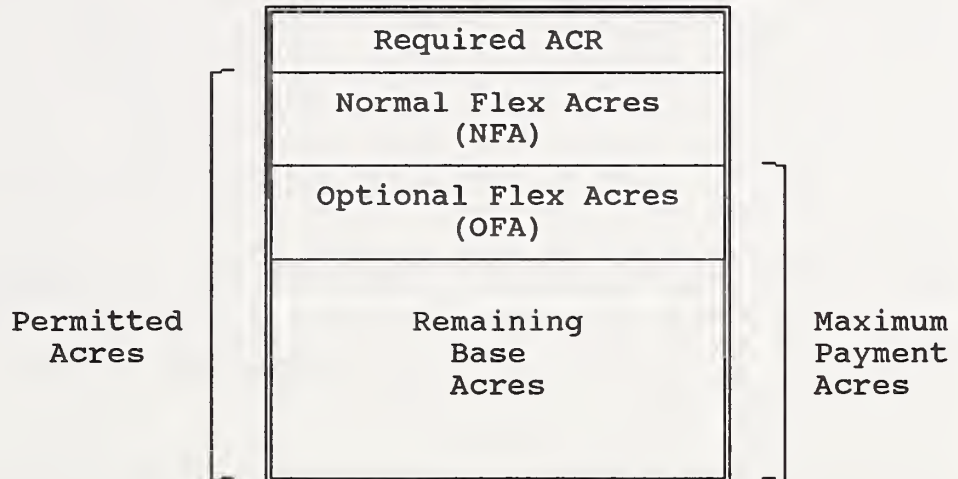
1. Combining Corn and Sorghum Bases
2. Permitting the production of crops "other than minor oilseeds" on 0, 50/92 acreage.

The key thing to remember is that the above planting flexibility opportunities, with the exception of the discretionary provisions, are at the producers option and will be available to them in each of the 1992 through 1995 crop years. The annual acreage reduction levels may change but the planting flexibility provisions remain in tact each year.

A broader look at planting flexibility under the 1990 Act points out the complexity of our programs but also offers planting opportunities not available in farm bills since the 1977 Act. A review of these various planting flexibility provisions follows:

Planting Flexibility (NFA/OFA)

To illustrate the various components of a crop acreage base (CAB) related to planting flexibility, consider the following diagram. The CAB for each program crop is essentially divided into four parts: required acreage conservation reserve (ACR), Normal Flex Acres (15% of the base), Optional Flex Acres (10% of the base), and remaining base acres.



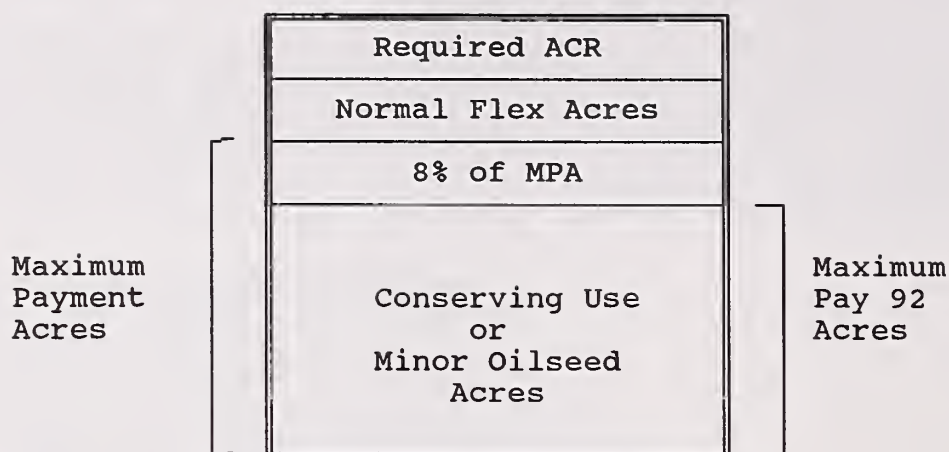
The NFA represents the portion of the permitted acreage known as "nonpayment" acres. The OFA represents the other part of the total planting flexibility provision. If a producer utilizes the OFA portion, the program crop maximum payment acres are reduced on an acre-for-acre basis. Crops planted on NFA and OFA are considered as planted to the program crop for historical planting (base retention) purposes. The crops that can be planted on NFA and OFA are:

- (a) any program crop
- (b) any oilseed
- (c) industrial or experimental crops
- (d) any other crop except fruits, vegetables, nuts, peanuts, tree crops, trees and wild rice
- (e) mung beans

Producers need to consider various market, cultural and equipment factors when deciding how to utilize this planting flexibility provision. A discussion of market return considerations is reviewed later in this paper.

0/92 Program (Wheat and Feed Grains)

To illustrate how the 0/92 program operates the following diagram points out the relevant factors.



The basic provisions of this program permits producers to not plant any of the program crop; devote the maximum payment acreage to conserving uses; and to qualify for a guaranteed minimum deficiency payment on an acreage equal to the maximum "pay 92" acres. The "guaranteed payment" on pay 92 acres is reduced for each acre that is planted to the program crop.

Alternatively, producers may plant the maximum payment acres (including the NFA) to minor oilseeds (sunflowers, safflower, canola, rapeseed, flaxseed and mustard seed) as well as sesame and crambe. When this alternative is selected, producers will receive the guaranteed deficiency payments on the pay 92 acres planted to one or more of the minor oilseeds sesame and crambe but must forgo loan eligibility for all of the minor oilseeds planted on pay 92 acres and elsewhere on the farm; or may forgo deficiency payments but retain loan eligibility.

Zero Certification

This provision may well be the "sleeper" in the 1990 Act. Some suggest it represents full flexibility. If producers certify that no acreage of a program crop will be planted on the farm and that the acreage of fruits and vegetables will not be in excess of normal plantings, the program CAB will be considered as planted for historical (base protection) planting purposes. Although program crop deficiency payments are lost under this option, it frees up the entire CAB (including ACR) for planting to other crops such as soybeans. This alternative may provide greater returns to producers than planting the program crop. For example, a Northern Plains producer with a 100 acre wheat base has net returns by participation in the wheat program of over \$8,500 (assumes 5% ARP and \$3.00 wheat prices). But, the same producer could zero certify wheat (plant no wheat) plant the 100 acres to soybeans and realize

net returns of over \$14,000 (assumes \$5.50 soybean prices and trend yields), a net gain of \$5,500.

Zero certification is an alternative that needs to be given serious consideration.

No Cross Compliance

The 1990 Act prohibits cross compliance. Previously, producers were required to either (1) participate in the programs for all program crops on the farm or (2) plant within the CAB for other program crops on the farm, to be eligible for program benefits on one or more program crops. This mandate was eliminated beginning with the 1991 crops. For the 1991 thru 1995 crops, producers on a farm can receive program benefits on a program crop; choose not to participate in the program for other crops and even overplant the CAB's of other crops on the farm. This process also extends another planting flexibility alternate to producers that did exist prior to the 1990 Act.

Base Building (Program Noncompliance)

An alternative producers have is to not participate in any of the programs for all program crops on the farm and overplant the CAB's. When this occurs the increased plantings result in base building. This is the only way base building can occur. Although it is possible to overplant a CAB on a farm under other scenarios, such plantings for the overplanted program crop will only be considered as planted on acreage equal to the CAB for that year, if program benefits are received on other program crops on the farm.

Generally, the base building option is not economical given existing program benefits versus market returns, but it does provide an alternative planting opportunity for producers.

Ghost Acres

Generally, this planting flexibility alternative doesn't surface unless adverse conditions exist. If producers are prevented from planting a program crop or have planted such crop and it fails due to a natural disaster, they may plant any other crop (including other program crops) on the affected acreage. The subsequent crop planted will be considered as planted to the original program crop thus the phrase "ghost crop." When the original program crop fails, deficiency payments will be made even if a subsequent crop is planted.

Integrated Farm Management (IFM) Program Option

A major thrust of the 1990 Act deals with conservation issues. The IFM program is designed to assist producers in adopting integrated,

multi-year, site-specific farm management plans by reducing farm program barriers to resource stewardship practices and systems; and to help producers improve and conserve soil and water on farms by converting land to resource conserving crops (RCC's) according to an approved IFM plan while protecting producers' payments. The Soil Conservation Service (SCS) is responsible for describing the resource conserving crop rotations and farming operations and practices to be implemented and maintained on the acreage enrolled in IFM.

To be eligible for IFM during crop years 1991 through 1995, producers must participate and comply with any ARPs in effect for all program crops and ELS cotton the farm. The farm may be entered for a minimum of 3 years, or, at the producer's option, for a period of 4 or 5 years. Producers must devote, on average, not less than 20 percent of all crop acreage bases on the farm, including ELS cotton, to resource conserving crops. Also, the producer and SCS must jointly develop an IFM plan consisting of resource conserving crop rotations. Signup for IFM is held concurrent with the annual enrollment period for program crops.

Resource conserving crops may be planted on payment acreage on the farm. Such crops on payment acres may earn deficiency payments provided that the planting of RCC's is part of a RCC rotation as specified in the IFM plan. Payments are not earned on traditionally underplanted acreage. Payment acres devoted to resource conserving crops may be hayed or grazed except during the designated consecutive 5-month nonhaying and nongrazing period. Resource conserving crops containing small grains may not be hayed or grazed before they are harvested for grain. Once harvested, the acreage may be hayed or grazed through the rest of the year, including during the designated consecutive 5-month nonhaying and nongrazing period. Payment acres devoted to resource conserving crops may be harvested for seed all year.

Acreage devoted to RCC's as part of an RCC rotation may be designated as ACR if it meets the history and minimum size and width requirements. ACR acreage devoted to perennial cover on which cost share assistance has been provided must not be credited towards the producer's RCC requirement. Fifty percent of the RCCs designated as ACR may be hayed and grazed during the entire year. Small grains, other than barley, oats, and wheat, that are RCCs designated as ACR may be harvested for grain.

The IFM program provides producers with an opportunity to develop conservation rotations on their farm and retain deficiency payments. Enrollment in this program for 1991 was less than 56,000 acres. Although high levels of participation are not anticipated, the amount of acreage enrolled into the IFM is expected to exceed last years level each of the next 4 years.

Whether the goal of 3 to 5 million acres is attained is not a certainty at this point.

Technical Corrections

The technical corrections legislation mentioned earlier contains a significant shift in farm policy as it relates to planting flexibility and other program operations. The most significant change deals with the issue of corn and grain sorghum bases.

Combined Corn/Sorghum

Upon enactment, this legislation will for each of the 1992 thru 1995 crops combine the permitted acres (CAB less ARP) for corn and sorghum. Producers can plant corn and sorghum on this combined permitted acreage in whatever mix they choose. With regard to these crops, full planting flexibility exists. The planting flexibility feature is not unlike prior years. However, the payment as well as planted and considered planting credit aspects change significantly. The total acreage of corn and sorghum planted plus ACR, Pay 92 acreage, and flex crop acreage will be prorated between corn and sorghum based on the ratio of corn and sorghum CAB's for the crop year. Thus, corn and sorghum plantings as well as acreage considered planted to corn and sorghum will be split proportionately between the crops regardless of the acreage mix. In the past, increased acreages of one crop resulted in an increase in base in a subsequent year while a like reduction occurred in the other crop. Also in the past payments followed the plantings, but with the technical correction's bill, payments will be made based on the ratio of the maximum payment acreage for corn and sorghum to the total maximum payment acreage for both crops. Appendix A provides an example of the differences between the 1991 program and the technical corrections bill.

Alternative Crops on 0, 50/92 Acreage

The technical corrections bill expands the crops that producers can plant under the 0/92 as well as 50/92 programs. In addition to the designated minor oilseeds (under 0/92 program only) producers can plant sesame and crambe (under both 0/92 and 50/92).

The 50/92 program applies to upland cotton and rice. The significant difference between 50/92 and 0/92 is the program crop planting requirement. Under 50/92 at least 50 percent of the maximum payment acreage must be planted to the program crop. Under the 0/92 program there is no minimum planting requirement.

In addition to the above planting opportunities, the technical corrections bill also permits double cropping of 0/92 acreage. This change would permit for example, the planting of soybeans

following a crop of winter canola on 0/92 acreage, if a history of double cropping soybeans exists on the farm (history requirement is at least three years of the preceding 5 years).

The corn/sorghum base and alternative crop changes resulting from the technical corrections bill will provide producers with additional choices on their planting flexibility plate.

What Happened in 1991?

Only one year has passed since the 1990 Act became law, but we can glean from available information how producers reacted to the new planting flexibility opportunities. The following table illustrates this point:

National Summary of 1991 Flexible Acres		
A. Program Crop Flex Planted To:		<u>Mil Acres</u>
	Soybeans	4.219
	Minor Oilseeds	.403
	Other Crops	<u>1.019</u>
	Total	5.642
B. Program Crops Planted on Other Program Crop Flex Acreage:		
	Wheat	.444
	Corn	.500
	Sorghum	.203
	Barley	.102
	Oats	.049
	Rice	.021
	Upland Cotton	<u>.486</u>
	Total	1.804
Source: 1991 Final Enrollment Report (August 14, 1991)		

Appendix B provides a State breakout of program crop flex acreage planted to soybeans, minor oilseeds and others crops (not including program crops). Early indications from our complying farms report generally confirms that the above planting intention figures are how producers eventually utilized their planting flexibility opportunities for the 1991 crop year.

Additionally, producers also planted about 530 thousand acres of minor oilseeds on 0/92 acreage. A breakdown by type of oilseed will be available by the end of this year. Nearly 90 percent of this acreage was planted in the States of North and South Dakota.

Planting Flexibility Outlook

As stated earlier, producers have numerous planting flexibility alternatives available to them for each of the 1992 through 1995 crops. The significant unknown variable will be the ARP levels which will be driven by weather variations and emerging market factors.

Given the current and projected supply situation for most program commodities, future ARP levels will likely stay at their current low levels. How producers choose to utilize their planting flexibility opportunities will depend on many factors. Generally producers are going to consider different crops based on their relative net returns to the crop normally planted. This is a sound and prudent economic decision. However, there are other factors that drive their planting decisions such as appropriate crop rotations, capital investments needed to produce a new crop, and whether viable markets are available to handle the crop. Although relative net returns are a key element in deciding to produce an alternative crop, the other factors just mentioned may be overriding. For this reason, any analytical estimates of crop switches viewed strictly with an eye to better net returns needs to be tempered. Factors other than net returns are more difficult to assess in an aggregate context. Judgments with regard to planting flexibility decisions on other than a net returns basis need to be assessed at the individual producer level. However, some insight can be gained by looking at breakeven prices for alternative crop combinations. Appendix's C, D, E and F are attached showing breakeven prices for various commodities.

A breakeven price between a pair of commodities is the price that gives the same returns above variable costs per acre from the alternative crop as from the original crop. The attached tables show two different approaches to a breakeven analysis. The first being market vs market returns (on NFA) and the other being program vs market returns (on OFA). The market returns of an alternative crop especially when making planting decisions on OFA needs to be sufficiently higher to offset program crop payments.

This is illustrated in the following table.

Breakeven Prices For Alternative Crop Combinations	
A. For Making Planting Decisions on NFA Assuming a \$3.00 per bushel market price for wheat	<u>Alternative crop with breakeven market price:</u> Corn \$1.59/bu. Sorghum \$1.82/bu. Rice \$6.12/cwt
B. For Making Planting Decisions on OA Assuming a \$3.00 per bushel market price for wheat	<u>Alternative crop with breakeven market price:</u> Corn \$1.80 Sorghum \$2.22 Rice \$6.58

Extensive analysis work has not been conducted with regard to planting flexibility. In an effort to improve our analytical capabilities, ASCS and ERS are currently involved in a joint study to evaluate and model the potential effects of the planting flexibility provisions. Hopefully, this work will be finished within the next several months. A report of our findings will be published.

IN SUMMARY, I am hopeful that you are now more fully aware of the planting flexibility opportunities under the 1990 Act. Our challenge is to continue educating the farmer and the industry about flexibility. The progress to date has been encouraging.

TREATMENT OF CORN AND SORGHUM BASES

1991 PROGRAM

EXAMPLE	# 1		# 2		# 3	
	NO TRANSFER		TRANSFER 50 ACRES TO CORN		TRANSFER 50 ACRES TO SORGHUM	
	CORN	SORGHUM	CORN	SORGHUM	CORN	SORGHUM
TOTAL BASE	100.0	100.0	150.0	50.0	50.0	150.0
ARP %	5.0	5.0	5.0	5.0	5.0	5.0
PLANTED ACREAGE	95.0	95.0	142.5	47.5	47.5	142.5
PLANTED AND CONSIDERED PLANTED	100.0	100.0	150.0	50.0	50.0	150.0
CORN PAYMENT ACRES	80.0	--	120.0	--	40.0	--
SORGHUM PAYMENT ACRES	--	80.0	--	40.0	--	120.0
CORN PAYMENT YIELD	104	--	104	--	104	--
SORGHUM PAYMENT YIELD	--	57	--	57	--	57
CORN PAYMENT RATE	\$0.58	--	\$0.58	--	\$0.58	--
SORGHUM PAYMENT RATE	--	\$0.56	--	\$0.58	--	\$0.56
DEFICIENCY PAYMENTS BASED ON CORN PAY ACRES & YIELD	\$4,828	--	\$7,238	--	\$2,413	--
DEFICIENCY PAYMENTS BASED ON SORGHUM PAY ACRES & YIELD	--	\$2,554	--	\$1,277	--	\$3,830
DEFICIENCY PAYMENTS FOR THE FARM	\$7,379	--	\$8,515	--	\$6,243	--
CHANGE IN DEE PAY FROM #1	--	--	15.4%	--	-15.4%	--

TECHNICAL CORRECTIONS BILL

EXAMPLE	# 4		# 5		# 6	
	NO CHANGE IN PLANTINGS		PLANT ADD'L CORN		PLANT ADD'L SORGHUM	
	CORN	SORGHUM	CORN	SORGHUM	CORN	SORGHUM
TOTAL BASE	100.0	100.0	100.0	100.0	100.0	100.0
ARP %	5.0	5.0	5.0	5.0	5.0	5.0
PLANTED ACREAGE	95.0	95.0	142.5	47.5	47.5	142.5
PLANTED AND CONSIDERED PLANTED	100.0	100.0	100.0	100.0	50.0	150.0
CORN PAYMENT ACRES	80.0	--	80.0	--	80.0	--
SORGHUM PAYMENT ACRES	--	80.0	--	80.0	--	80.0
CORN PAYMENT YIELD	104	--	104	--	104	--
SORGHUM PAYMENT YIELD	--	57	--	57	--	57
CORN PAYMENT RATE	\$0.58	--	\$0.58	--	\$0.58	--
SORGHUM PAYMENT RATE	--	\$0.56	--	\$0.56	--	\$0.56
DEFICIENCY PAYMENTS BASED ON CORN PAY ACRES & YIELD	\$4,828	--	\$4,826	--	\$4,826	--
DEFICIENCY PAYMENTS BASED ON SORGHUM PAY ACRES & YIELD	--	\$2,554	--	\$2,554	--	\$2,554
DEFICIENCY PAYMENTS FOR THE FARM	\$7,379	--	\$7,379	--	\$7,379	--
CHANGE IN DEE PAY FROM #4	--	--	0.0%	--	0.0%	--

Note: highlights differences between 1991 program and technical corrections bill

9-11 (2/88) 2/1/88 (rev)

 TOTAL PROGRAM CROPS:
 1991 FLEXED ACREAGE REPORT (INTENTIONS)
 NFA AND OFA PLANTED TO FOLLOWING CROPS:

State	Soybeans	Minor Oil-seeds	Other Crops	Total
AL	25,649	2,394	3,239	31,282
AK	419	0	0	419
AZ	13,570	660	5,948	20,178
AR	197,715	1,260	5,172	204,147
CA	62,170	29,842	91,693	183,705
CO	70,126	2,287	12,731	85,144
CT	1,014	64	0	1,078
DE	4,068	5	10	4,083
FL	7,029	234	4,965	12,228
GA	56,827	5,359	28,138	90,324
ID	9,609	5,695	50,549	65,853
IL	388,598	2,032	7,811	398,441
IN	204,135	1,201	9,203	214,539
IA	468,644	1,539	13,143	483,326
KS	263,481	26,567	66,577	356,625
KY	41,472	1,069	10,145	52,686
LA	99,693	630	1,477	101,800
ME	0	0	30	30
MD	20,132	210	685	21,027
MA	215	9	0	224
MI	133,514	3,807	19,545	156,866
MN	23,142	344,535	24,350	392,027
MS	85,682	1,069	89,096	175,847
MO	184,767	1,160	5,314	191,241
MT	61,701	19,883	52,108	133,692
NE	284,546	5,661	52,712	342,919
NV	0	0	21	21
NH	0	0	175	175
NJ	6,200	13	101	6,314
NM	19,791	1,385	30,309	51,485
NY	15,308	2,260	6,508	24,076
NC	70,658	465	8,221	79,344
ND	163,893	197,895	243,238	605,026
OH	170,655	2,300	178,567	351,522
OK	113,513	2,478	12,186	128,177
OR	659	639	37,444	38,742
PA	18,567	454	2,037	21,058
RI	1	0	0	1
SC	44,240	188	3,153	47,581
SD	232,683	38,715	51,077	322,475
TN	49,016	1,803	63,620	113,439
TX	357,911	20,118	147,466	525,495
UT	4,511	619	1,665	6,795
VT	1,221	0	0	1,221
WA	31,310	1,806	2,589	35,705
WV	36,422	3,805	16,663	56,890
WY	2,832	42	1,002	3,878
WI	92,914	1,834	26,005	120,753
WY	3,890	339	3,234	7,463
US	4,219,506	403,505	1,019,257	5,642,268

APPENDIX C

BREAKEVEN PRICES FOR ALTERNATIVE CROP COMBINATIONS MARKET vs. MARKET RETURNS (For use in Making Planting Decisions on NFA)										
	Wheat Market Price (\$/bu)									
	2.50	2.75	3.00	3.25	3.50	3.75	4.00			
Corn (\$/bu)	1.43	1.51	1.59	1.67	1.74	1.82	1.90			
Sorghum (\$/bu)	1.52	1.67	1.82	1.97	2.11	2.26	2.41			
Barley (\$/bu)	1.67	1.84	2.01	2.19	2.36	2.53	2.71			
Oats (\$/bu)	1.45	1.63	1.80	1.97	2.14	2.31	2.48			
Rice (\$/cwt)	5.78	5.95	6.12	6.29	6.45	6.62	6.79			
Upland Ctn (\$/lb)	0.498	0.513	0.527	0.542	0.557	0.571	0.586			
Soybeans (\$/bu)	3.08	3.36	3.63	3.91	4.19	4.47	4.74			
Sunflower (\$/lb)	0.052	0.060	0.067	0.074	0.081	0.089	0.096			
Canola (\$/lb)	0.064	0.070	0.076	0.082	0.088	0.094	0.100			

NOTE: The breakeven price between a pair of commodities is the price that gives the same net returns above variable costs per acre from the alternative crop as from the original crop. For example, if the market price of wheat were \$3.00/bu, the market price of corn would have to be at least \$1.59/bu. to breakeven. Any corn price above \$1.59/bu. would give the producer a higher net return for corn than for wheat.

BREAKEVEN PRICES FOR ALTERNATIVE CROP COMBINATIONS PROGRAM vs. MARKET RETURNS (For use in Making Planting Decisions on OFA)										
	Wheat Market Price (\$/bu)									
	2.50	2.75	3.00	3.25	3.50	3.75	4.00			
Corn (\$/bu)	1.77	1.78	1.80	1.82	1.84	1.85	1.87			
Sorghum (\$/bu)	2.16	2.19	2.22	2.26	2.29	2.32	2.36			
Barley (\$/bu)	2.41	2.45	2.49	2.53	2.56	2.60	2.64			
Oats (\$/bu)	2.19	2.22	2.26	2.30	2.34	2.38	2.41			
Rice (\$/cwt)	6.50	6.54	6.58	6.61	6.65	6.69	6.73			
Upland ctn (\$/lb)	0.561	0.564	0.567	0.570	0.574	0.577	0.580			

NOTE: If the price of wheat were \$3.00/bu. (along with around a \$1.00/bu. deficiency payment), the market price of corn would have to be at least \$1.80/bu. to give the producer the same return per acre on optional flex as if the producer continued to plant wheat in the program.

APPENDIX D

BREAKEVEN PRICES FOR ALTERNATIVE CROP COMBINATIONS MARKET vs. MARKET RETURNS (For use in Making Planting Decisions on NFA)										
	Corn Market Price (\$/bu)									
	1.85	2.00	2.15	2.30	2.45	2.60	2.75			
Wheat (\$/bu)	3.84	4.31	4.79	5.27	5.75	6.23	6.70			
Sorghum (\$/bu)	2.31	2.60	2.88	3.17	3.45	3.74	4.02			
Barley (\$/bu)	2.59	2.93	3.26	3.59	3.92	4.25	4.59			
Oats (\$/bu)	2.37	2.69	3.02	3.34	3.67	4.00	4.32			
Rice (\$/cwt)	6.68	7.00	7.32	7.65	7.97	8.29	8.61			
Upland Ctn (\$/lb)	0.576	0.604	0.632	0.659	0.687	0.715	0.743			
Soybeans (\$/bu)	4.56	5.09	5.62	6.15	6.68	7.21	7.75			
Sunflower (\$/lb)	0.091	0.105	0.119	0.133	0.147	0.160	0.174			
Canola (\$/lb)	0.096	0.108	0.119	0.130	0.142	0.153	0.165			

NOTE: The breakeven price between a pair of commodities is the price that gives the same net returns above variable costs per acre from the alternative crop as from the original crop. For example, if the market price of corn were \$2.30/bu, the market price of wheat would have to be at least \$3.84/bu. to breakeven. Any wheat price above \$3.84/bu. would give the producer a higher net return for wheat than for corn.

BREAKEVEN PRICES FOR ALTERNATIVE CROP COMBINATIONS PROGRAM vs. MARKET RETURNS (For use in Making Planting Decisions on OFA)										
	Corn Market Price (\$/bu)									
	1.85	2.00	2.15	2.30	2.45	2.60	2.75			
Wheat (\$/bu)	5.89	6.01	6.13	6.25	6.37	6.49	6.61			
Sorghum (\$/bu)	3.54	3.61	3.68	3.75	3.82	3.89	3.96			
Barley (\$/bu)	4.02	4.10	4.18	4.27	4.35	4.43	4.52			
Oats (\$/bu)	3.77	3.85	3.93	4.01	4.09	4.17	4.25			
Rice (\$/cwt)	8.06	8.14	8.22	8.30	8.38	8.46	8.54			
Upland ctn (\$/lb)	0.695	0.702	0.709	0.716	0.723	0.730	0.737			

NOTE: If the price of corn were \$2.30/bu. (along with around a \$0.55/bu. deficiency payment), the market price of wheat would have to be at least \$6.25/bu. to give the producer the same return per acre on optional flex as if the producer continued to plant corn in the program.

**BREAKEVEN PRICES FOR ALTERNATIVE CROP COMBINATIONS
MARKET vs. MARKET RETURNS
(For use in Making Planting Decisions on NFA)**

	Rice Market Price (\$/cwt)									
	5.50	6.25	7.00	7.75	8.50	9.25	10.00			
Wheat (\$/bu)	3.94	3.94	3.94	4.24	5.35	6.46	7.58			
Corn (\$/bu)	1.88	1.88	1.88	1.98	2.33	2.67	3.02			
Sorghum (\$/bu)	2.38	2.38	2.38	2.55	3.22	3.88	4.54			
Barley (\$/bu)	2.67	2.67	2.67	2.87	3.65	4.42	5.19			
Oats (\$/bu)	2.44	2.44	2.44	2.64	3.40	4.16	4.92			
Upland Ctn (\$/lb)	0.582	0.582	0.582	0.599	0.664	0.729	0.794			
Soybeans (\$/bu)	4.68	4.68	4.68	5.01	6.24	7.48	8.71			
Sunflower (\$/lb)	0.094	0.094	0.094	0.103	0.135	0.167	0.200			
Canola (\$/lb)	0.099	0.099	0.099	0.106	0.132	0.159	0.186			

NOTE: The breakeven price between a pair of commodities is the price that gives the same net returns above variable costs per acre from the alternative crop as from the original crop. For example, if the market price of rice is \$7.00/bu, the market price of wheat would have to be at least \$3.94/bu to breakeven. Any wheat price above \$3.94/bu would give the producer a higher net return for wheat than for rice.

**BREAKEVEN PRICES FOR ALTERNATIVE CROP COMBINATIONS
MARKET vs. MARKET RETURNS
(For use in Making Planting Decisions on NFA)**

	Upland Cotton Market Price (\$/lb)									
	0.52	0.56	0.59	0.63	0.66	0.70	0.73			
Wheat (\$/bu)	2.93	3.56	4.08	4.76	5.28	5.97	6.48			
Corn (\$/bu)	1.57	1.76	1.93	2.14	2.30	2.52	2.68			
Sorghum (\$/bu)	1.78	2.15	2.46	2.87	3.17	3.58	3.89			
Barley (\$/bu)	1.97	2.40	2.76	3.24	3.60	4.07	4.43			
Oats (\$/bu)	1.75	2.18	2.53	3.00	3.35	3.82	4.17			
Rice (\$/cwt)	6.07	6.49	6.84	7.31	7.65	8.12	8.46			
Soybeans (\$/bu)	3.56	4.26	4.83	5.59	6.17	6.93	7.50			
Sunflower (\$/lb)	0.065	0.083	0.098	0.118	0.133	0.153	0.168			
Canola (\$/lb)	0.075	0.090	0.102	0.118	0.131	0.147	0.159			

NOTE: The breakeven price between a pair of commodities is the price that gives the same net returns above variable costs per acre from the alternative crop as from the original crop. For example, if the market price of upland cotton were \$0.63/lb, the market price of wheat would have to be at least \$4.76/bu to breakeven. Any wheat price above \$4.76/bu would give the producer a higher net return for wheat than for upland cotton.

**BREAKEVEN PRICES FOR ALTERNATIVE CROP COMBINATIONS:
PROGRAM vs. MARKET RETURNS
(For use in Making Planting Decisions on OFA)**

	Upland Cotton Market Price (\$/lb)									
	0.52	0.56	0.59	0.63	0.66	0.70	0.73			
Wheat (\$/bu)	4.97	5.06	5.17	5.31	5.42	5.57	5.94			
Corn (\$/bu)	2.21	2.23	2.27	2.31	2.35	2.39	2.51			
Sorghum (\$/bu)	2.99	3.04	3.11	3.19	3.26	3.35	3.57			
Barley (\$/bu)	3.38	3.44	3.52	3.62	3.70	3.80	4.06			
Oats (\$/bu)	3.14	3.20	3.27	3.37	3.45	3.55	3.80			
Rice (\$/cwt)	7.44	7.50	7.58	7.68	7.75	7.85	8.10			

NOTE: If the price of upland cotton were \$0.63/lb (along with deficiency payments and any marketing loan gains), the market price of wheat would have to be at least \$3.31/bu to give the producer the same return per acre on optional flex as if the producer continued to plant upland cotton in the program.

**BREAKEVEN PRICES FOR ALTERNATIVE CROP COMBINATIONS:
PROGRAM vs. MARKET RETURNS
(For use in Making Planting Decisions on OFA)**

	Rice Market Price (\$/cwt)									
	5.50	6.25	7.00	7.75	8.50	9.25	10.00			
Wheat (\$/bu)	8.46	8.57	8.18	7.66	7.95	8.23	8.52			
Corn (\$/bu)	3.30	3.33	3.21	3.05	3.14	3.23	3.32			
Sorghum (\$/bu)	5.07	5.13	4.90	4.59	4.76	4.93	5.10			
Barley (\$/bu)	5.80	5.88	5.61	5.25	5.45	5.65	5.85			
Oats (\$/bu)	5.52	5.59	5.33	4.97	5.17	5.36	5.56			
Upland Ctn (\$/lb)	0.845	0.851	0.829	0.798	0.815	0.832	0.849			

NOTE: If the price of rice were \$7.00/bu (along with deficiency payments and any marketing loan gains), the market price of wheat would have to be at least \$8.18/bu to give the producer the same return per acre on optional flex as if the producer continued to plant rice in the program.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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Outlook '92

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OUTLOOK FOR DAIRY

Sara D. Short
Agricultural Economist
Economic Research Service

Conditions facing dairy markets at the end of 1991 are considerably different than those at the beginning of the year. Milk supplies are smaller; wholesale dairy product prices are relatively strong; average farm milk prices are above a year earlier for the first time in a year; commercial use has started to recover from recession-weakened levels; and surpluses removed from the market place by the price support program are dramatically smaller.

Given where the dairy sector is now, where is it headed in the year to come? Assuming the dairy provisions of the 1990 Farm Bill prevail and the economy recovers, 1992 is expected to be characterized by little expansion in milk production, slightly higher farm milk prices, and improved commercial sales of dairy products.

In 1992, the dairy sector will also face challenges associated with possible changes in Federal Milk Marketing Orders and possible partial removal of trade barriers as a result of an agreement under the General Agreement on Tariffs and Trade (GATT). Beyond 1992, new domestic food labeling rules may provide incentives for the increased production of lower fat versions of high milkfat-content products, such as Cheddar cheese, butter, and ice cream. One final unresolved issue on the near-term horizon is the approval of bST, and it's adoption.

Milk Output To Change Little

Expansion plans in 1992 probably will be conservative primarily because income prospects are not too bright. Milk prices are expected to be low compared with those of most of the 1980's. Yet, debt-asset ratios probably will be low and a fairly large number of farms could take on some new debt in 1992.

In early 1992, continued high concentrate feed prices and declining milk prices will erode most of the improvement in milk-feed price relationships expected for fourth-quarter 1991. The milk-feed ratio is expected to average 1.6 down from 1.7 during October-December. Returns over concentrate costs are projected to drop almost 10 percent.

The relatively low returns expected in the first half of 1992 may result in larger numbers of farms exiting the industry than was typical during the eighties. However, the exit rate is not expected to be as large as during early 1991, when low prices following 2 years of high prices precipitated substantial exit.

For all of 1992, returns over concentrate costs are expected to be similar to 1991. The milk-feed ratio could edge lower to about 1.5. This ratio is associated with below-trend growth in concentrate feeding and milk per cow.

Milk production in 1992 is projected to stay close to a year earlier during most of the year. None of the foreseen forces appear to be strong enough to move output significantly.

Low milk prices from late 1990 until mid-1991 and strong cull cow prices eroded expansion in milk output very quickly in 1991. Although first quarter milk production was up almost 2 percent from a year earlier, spring milk production was about unchanged from a year earlier, as the decline in cow numbers accelerated and increases in output per cow dipped below trend levels. Production during July-September declined almost 1 percent. Farm milk price increases during the second half of the year helped moderate declines in production during the fourth quarter.

October-December 1991 milk prices will be considerably higher than earlier in the year and up a tenth from fourth-quarter 1990. However, with feed costs still high, milk-feed price relationships in general will be no more than modestly favorable. Milk production is expected to finish the year about even with a year earlier. Milk cow numbers probably will average well below a year earlier, while growth in output per cow is expected to continue below trend.

Total 1991 milk production is projected to be about 148.5 billion pounds, similar to 1990. Milk cow numbers will average about 1 percent below 1990's 10.1 million. Milk per cow will rise about 1 percent from 1990.

Farm Milk Prices To Increase Slightly

Average farm milk prices in 1992 are expected to change little from 1991. Although recovery in commercial use of dairy products is expected, dairy market tightness will lessen as production bounces back a bit. Also, the 1991 market problems are not expected to reoccur. In 1991, the lack of movement between butter/powder plants and cheese plants, as cheese markets tightened, was one of the primary reasons for the increases in milk prices at a time when dairy product sales were sluggish.

In general, wholesale dairy product prices remain above a year earlier. As milk supplies declined during the summer, wholesale cheese prices increased steadily from the relatively low levels of early 1991. By September-October, butter and nonfat dry milk markets had tightened enough to generate substantial price rises for these products. The price pattern of late spring and summer reflected the seeming inability of higher cheese prices to attract enough milk away from butter/powder operations.

Wholesale prices peaked early this year, as conditions proved to be less tight than much of the industry had anticipated. Cheddar cheese prices on the Wisconsin Cheese Exchange have already started to drop. Between mid-October and late-November cheese prices declined 5-6 cents. Nonfat dry milk prices (Central States) declined about 7 cents. Butter prices on the Mercantile Exchange did not begin to drop until November 22. Grade A butter prices dropped 6.25 cents to 98.25 cents (the support purchase price). Grade AA butter prices fell 6 cents to \$1.035 per pound.

Farm milk prices will finish 1991 above the dropping prices of a year ago. Increases in wholesale dairy products prices between May and early October were translated into sizable increases in farm milk prices. The Minnesota-Wisconsin (M-W) price of manufacturing grade milk was \$12.50 per cwt in October, \$2.48 above the March low and \$2.02 above a year ago. The average price of all milk received by farmers was \$13.20 per cwt in October, \$1.90 above the \$11.30 posted in April, and 10 cents above a year earlier. October marked the first time in 12 months that farm milk prices were above a year earlier.

The 1991 price of all milk will be about \$12.25 per cwt, down about 10 percent from 1990 and 1989, but basically unchanged from 1988. Late 1991 increases will not be enough to outweigh the very large year-to-year declines posted during the first three quarters of the year.

Retail dairy product prices in 1992 may increase little. If wholesale and farm prices hold close to 1991 levels, retailers may be willing to absorb increases in marketing costs so as not to choke off increases in retail movement brought on by an economy recovering from a recession.

If wholesale and farm prices stay strong during the remainder of 1991, retail dairy product prices will edge higher, but are expected to continue below a year ago. The 1991 retail dairy price index will average about 1 percent below 1990. Relatively wide farm-to-retail spreads absorbed some of the increases in wholesale and farm prices posted during the second half of the year.

Commercial Use To Improve

In 1992, commercial use of dairy products (milk equivalent, milkfat basis) is forecast 2-3 percent above a year earlier. Expected economic recovery helps support such an increase over the recession-weakened levels of 1991.

In 1992 and beyond, the dairy sector will continue to be challenged by consumers' dietary and health concerns. New domestic food labeling rules, scheduled to go into effect at the end of 1992, may provide incentives to further accommodate changes in product preferences. Within the context of the new rules, lower fat versions of high milkfat-content products (as defined by the Food and Drug Administration's standards of identity)-such as Cheddar cheese, butter, and ice cream-will be allowed to retain product names.

For all of 1991, commercial use is forecast at almost 140 billion pounds, slightly higher than a year ago. Increases during the second half of the year are expected to offset the effects of a very weak economy during the first half of the year.

Commercial use of dairy products during January-June 1991 was down almost 2 percent from a year earlier. With few exceptions, use of dairy products declined during the first half of 1991. Commercial use of butter, American cheese, and nonfat dry milk were down substantially. Ice milk, sherbet, and cottage cheese sales also declined.

Fluid milk sales ran almost 1 percent above a year earlier during the first 6 months of 1991. Lowfat and skim milk items sales increased almost 2.8 percent, while sales of whole milk items declined 2.5 percent. Frozen yogurt sales continued to increase but at a much slower pace. Ice cream sales increased almost 10 percent. Generally, ice cream is perceived as a relatively affordable 'luxury' during recession periods, when consumption of many luxuries are passed over.

Stocks To Decline

At the beginning of 1992, total dairy product stocks, milk equivalent (milkfat basis), are expected to be below a year earlier. Projected increases in commercial sales and smaller milk supplies for the second half of 1991 will result in a more normal seasonal draw down of available stocks. Given the forecasts for increases in commercial use and little change in milk production from 1991, total stocks during 1992 will finish the year below year earlier levels.

The milk equivalent (milkfat basis) of total commercial dairy stocks reached almost 6.2 billion pounds early this summer, up almost 15 percent from a year earlier. Sluggish sales and ample milk supplies during the first half of 1991 were the primary forces contributing to the large stocks. However, commercial holdings dropped relatively rapidly as markets tightened during the summer. Between July 1 and November 1, commercial stocks declined about 15 percent.

Government stocks were about 13 billion pounds, milk equivalent (milkfat basis), during most of the summer. Butter and nonfat dry milk stocks were considerably higher than a year earlier, as purchases increased during the first half of 1991. Unlike a year ago, the Government held small amounts of American cheese. By November, Government stocks declined by more than 1 billion pounds. As of November 1, the Commodity Credit Corporation (CCC) held

no uncommitted inventories of American cheese, 35 million pounds of nonfat dry milk, and 345 million pounds of butter.

Milk Surplus To Decline

For calendar 1992, CCC net removals, milk equivalent (milkfat basis), of dairy products under the price support program are forecast at 6-8 billion pounds. A relatively healthier economy is expected to stimulate commercial use, while the milk supply is forecast to increase little.

Last spring and summer, butter/powder plants held onto a large share of available supplies, even after cheese prices started to rise. The net result was that butter and nonfat dry milk production increased at a time when sales were very sluggish. Consequently, sales to the CCC were higher than otherwise.

After increasing 30 percent from a year earlier during the first 6 months of 1991, CCC net removals during July-September fell sharply. Removals during the last 3 months have been very small and made up solely of butter. The quantities removed from the market include amounts exported through the Dairy Export Incentive Program (DEIP). For all of 1991, net removals of dairy products are forecast to be about 10 billion pounds, milk equivalent (milkfat basis), up from 9 billion a year earlier.

DEIP Exports to Increase

U.S. exports of dairy products in 1992 are expected to increase substantially from a year earlier. However, the majority of this increase will be achieved through the DEIP. Although world prices of major dairy products have strengthened, strictly commercial U.S. exports are not expected to be very competitive with available foreign product.

Prices for butter and nonfat dry milk in international markets firmed in late summer, reaching or exceeding year-ago prices. Some of the price jump was attributed to a slight weakening of the U.S. dollar from its position earlier in the summer. In addition, European butter and nonfat dry milk markets were reported tightening due to decreased butter and nonfat dry milk production and increased calf feeding of nonfat dry milk. Eastern European milk deliveries and product stocks also declined.



Outlook '92

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U. S. DAIRY PROSPECTS AND PROGRAMS

Floyd D. Gaibler
Executive Director, National Cheese Institute
Vice President, International Dairy Foods Association

I appreciate the opportunity to participate in the Department's Agriculture Outlook '92 Conference and offer my perspective on the U.S. dairy prospects and programs. As we move toward the 21st Century, the dairy industry uniquely faces many challenges and opportunities. Our ability to overcome those challenges and take advantage of the opportunities will be predicated, in large part, on our willingness to come to terms on constructive and effective long-term dairy policy. Without some fundamental agreements on the basic policy parameters that will guide us into the future, we are placing our industry at risk and constraining our ability to survive and prosper over the long run.

A DECADE OF POLICY DISARRAY

The dairy industry has spent much of the last decade grappling and disagreeing with itself on what parameters should encompass an effective long-term dairy policy. And in reviewing the aftermath of debate over that period, I am uncertain that the dairy industry has learned many lessons.

The problems began with the semi-annual price support adjustments of the late 1970's which raised government supports well above market-clearing levels attracting not only more resources within the dairy industry, but outside the industry as well. The obvious result was an inundation of surplus products which forced the dairy industry to undergo a painful retrenchment. Beginning in 1981, price supports were frozen and then decreased and various supply management techniques were tried, including 50 cent assessments and a milk diversion program.

After many fits and starts, the 1985 Farm Bill established a framework from which the dairy industry could begin to make long-term decisions. Price supports were allowed to move up or down to reflect market-clearing levels. The Secretary of Agriculture had standby authority to consider alternative supply management options. Unfortunately, the political price of market-orientation was the mandated increase in Class I differentials and the whole-herd buyout program. These provisions sent obvious conflicting signals to producers and were clearly at odds with the overall objectives of the legislation to lower government costs and surpluses.

One other provision that was included was the establishment of an industry National Commission on Dairy Policy. The Commission was directed to study the future milk price support program and the future of the milk production industry. After more than 18 months of hearings and meetings, the Commission produced a 150 page document which made several major policy recommendations in 1988. It was hailed as the first unified proposal from the dairy industry that all milk producers — large and small — could embrace.

One of its overriding recommendations was that price supports should not be used to accomplish social goals, stating that the trend toward fewer, larger farms began decades ago and will continue under any farm policy or program. The Commission proposed several elements that should encompass the dairy price support program, including: flexibility, durability, market orientation, consistency, income sufficiency, and reasonable consumer prices.

Specifically, the Commission recommended that the Secretary of Agriculture should have the discretionary authority to adjust the support price either upward or downward. Market forces, together with adjustments in the support price, should balance supply and demand.

Regarding supply management, the Commission stated, "The use of a production control program on a permanent basis is not in the best interest of the dairy industry." The Commission recommended that the Secretary should have options in considering a production control program, primarily to make it more difficult for producers to anticipate a specific type of production control program and thereby circumvent the program's intent. Most importantly, the Commission recommended "A reduction in the support price should accompany controls to discourage increased production by nonparticipants or by milk producers who have adjusted plans to increase production as the program ends."

The Commission recommendations were to lay the groundwork for the debate on fine tuning the 1985 Farm Bill. However, the ink on that document was hardly dry before the industry pressed the Congress for an increase in the price support because of the 1988 drought. The problem was not low milk prices but a feed availability situation. Nonetheless, the Congress temporarily increased the support price and further exacerbated the variability in milk prices.

In 1989, Congressman Steve Gunderson (R - WI) challenged the dairy industry to achieve a national consensus and develop a modern, national dairy policy. In an extensive policy paper, he suggested that the dairy industry must develop goals and guidelines that would remove several artificial elements under Federal milk marketing orders, remove regional barriers and accommodate the changing impacts of international trade, technology, consumption and consumer preferences.

The stage was set in 1990 to improve the provisions of the 1985 Farm Bill. Most in agriculture felt that the 1985 Farm Bill had served agriculture well. In fact, the House and Senate Agriculture Committees reintroduced the 1985 Farm Bill as the markup vehicle and extended its provisions for five more years. Many of us felt that the Congress had accomplished its best work and should have declared victory at that point rather than risk eroding the market orientation that was achieved in 1985.

However, rather than forge together and work toward some form of national consensus, some in the dairy industry proposed increasing the support price and establishing a floor of \$10.60/cwt. over the next five years. In addition, they proposed the implementation of production quotas to manage supply and a tax on dairy farmers to keep budget costs down. When the House dairy subcommittee

approved the proposals, Congressman Gunderson called the subcommittee action "legislating with our hearts, not our pencils."

Dairy processors and some dairy producer organizations supported alternative legislation which utilized the framework of the 1985 Farm Bill and provided for changes in both calculations of dairy surpluses and in the current levels at which price adjustments are triggered. In addition, it provided for shifts in the relative values of milkfat and nonfat solids to reflect changing demand.

Throughout this process, the Administration voiced its strong objections to the use of quotas and the establishment of an inflexible pricing policy. Instead, it proposed a continuation of the current policy with a wider range of price support adjustments and purchase trigger levels to give the Secretary flexibility to recognize market conditions when setting support prices.

Rather than compromise and provide the necessary parameters for a long-term industry policy direction, the dairy industry did not assume its responsibilities. The result was a dairy title that removed the price adjustment flexibility and market orientation of the 1985 legislation. With no dairy industry consensus, the Congress filled the vacuum by including provisions to further micromanage the Secretary of Agriculture and mandated that USDA study various alternative supply management approaches. Unfortunately, the Congress precluded the Department from considering some of the more palatable approaches and in its infinite wisdom mandated that a whole-herd buyout or price support reductions could not be analyzed under the study.

The legislation fundamentally failed to lay out the long-term policy direction that the industry had struggled with over the last ten years. Yet the blame for this failure lay directly at the feet of the industry itself.

1991 — THE YEAR OF CRISIS MANAGEMENT

The 1988 drought along with the world shortage of nonfat dry milk in 1989 resulted in tight supply conditions particularly in late 1989. This, in turn, resulted in record increases in raw milk prices that lasted through mid-1990. Farmers responded to those high prices by expanding dairy herds and increasing milk per cow. Not surprisingly, milk prices began to drop in late 1990.

Thus, in early 1991, it was also not surprising that some dairy producer groups would make their annual pilgrimage to Congress for relief. Proponents fueled the concern of low prices with emotionalism and spurious and unfounded charges that dairy processors and retailers were gouging consumers.

The Senate responded quickly without hearings. Offered as an amendment to the Dire Emergency Supplemental Appropriations Bill, the legislation mandated a \$3.00 increase in Class I prices; mandated higher minimum solids for milks; reduced interest rate loans and payments to Grade B producers ; and mandated exports of heifers and dairy products.

While the legislation passed in the Senate, it was dropped in Conference because of opposition from processors, consumer groups, food retailers, social service agencies and school lunch administrators. Not to be deterred, alternative dairy proposals sprang up in both the House and Senate.

In what can only be described as a massive overreach, the House Agriculture Committee approved legislation increasing the price support by \$2.50 to \$12.60/cwt. and mandated production quotas through two-tier pricing. In fact, the price support level adopted by the Committee was \$1.00 above what dairy producer interests had proposed to Congress.

In the interim, the Department initiated several actions to strengthen milk prices and sent clear and unmistakable signals to the dairy industry and the Congress that such legislative proposals would be vetoed by the President. In addition, they accelerated their study of supply management alternatives and determined that, of all alternatives studied, the current program was superior.

With the threat of a veto and no consensus of support, the legislation did not move. Robert H. Rumler, in a September article in HOLSTEIN WORLD, correctly described the situation as "crisis management by legislation." In analyzing the House legislation, Mr. Rumler noted, "H.R. 2837 has dealt a damaging blow to the opportunity for useful, constructive dairy legislation this year. Valuable time was wasted. And we seem to be about where we were this time in 1988, at least as far as policy and program is concerned."

At the same time, milk prices — the genesis of this legislative overreach — have risen steadily since May. Why? Partly because of the actions of USDA, but also because farmers responded to the price signals and culled herds, changed milk rations and made other management decisions that resulted in a decline in milk production. The marketplace does work and corrections did occur.

Still, not to be deterred, the Congress made one last gasp at dairy legislation, proposing a \$11.10/cwt. price support level, a voluntary diversion program, continued inclusion of mandated nonfat solids and an assortment of bells and whistles. The reasoning? It would be better to pass something this year rather than have to deal with it all over again in an election year.

Irrespective of the results, the experience and the process has been an abject failure. Rather than communicating their concerns with dairy processors, dairy farm organizations have repeatedly gone to the Congress for solutions. Congress, in turn, has repeatedly told these organizations to only bring something to them if it has a consensus of industry support. And the Administration has been caught in the middle catching flak from all directions.

In the absence of any cohesive policy parameters, provisions are concocted to help bolster milk prices. For example, the proposal to increase nonfat solids in milks was dreamed up to drive up nonfat milk prices and appease California dairy farmer interests. Yet fluid milk processors are somehow expected to go along with this idea even though it increases their costs and they believe it will decrease sales. Certainly, if milk processors thought it would increase sales, they would be very unwise to oppose such provisions. In addition to setting a terrible precedent of legislating food standards, the legislation would result in the increased production of its joint product — milkfat — which is in chronic surplus.

Let's give milk processors some credit. If fortified fluid milk is demanded by consumers, they will provide it. Yet it became clear that the processing industry had no control over this convoluted provision and were forced to fight against it vigorously during the policy debate.

In yet another example, provisions to establish a security trust for the benefit of dairy producers were included in almost every dairy legislative proposal since the 1990 Farm Bill. But Congress has yet

to hold any hearing or even have any substantive discussion with the dairy industry or the lending institutions on this issue. The implications of these provisions on dairy processors and the lending institutions are tremendous. However, without a massive campaign effort, the provisions most certainly would have become the law of the land.

Dairy farm organizations were ridiculed in the press for their aggressive schemes which brought on the wrath of the Administration, consumer groups and the cattlemen, among others. And for what? Many have suggested that it was for the purpose of making a political issue and not sound industry policy.

Indeed, much of the dairy industry is leading with its chin. And as long as we proceed with politics as usual, the Congress, the Administration, consumer groups, cattlemen and others will be quite obliged to step up and deliver a right cross.

WHERE DO WE GO FROM HERE?

For those of us familiar with the dairy industry, it is not surprising that it has been extremely difficult to achieve a general consensus on dairy policy. Structurally, the dairy industry is diverse. A milk deficit area like the Southeast faces different problems than a surplus area like the Upper Midwest. California and much of the Southwest have been transformed from a regional supplier of fluid milk to a dominant manufacturer of dairy products that directly compete with other regions of the country. These shifts will likely continue, further exacerbating the diversity of interests among dairy farmers and processors.

Dairy farmers, themselves, are diverse. The costs of production vary greatly from region to region and within regions. In the September 1991 issue of DAIRY TODAY it was reported that the average cost of production in the state of Vermont, alone, ranges from \$10 to \$17/cwt. Clearly, that group of farmers on the top half of that cost curve will not remain economically viable under any policy scenario over the long run.

Achieving a consensus on public policy has always been a difficult process. Legislating public policy has been compared to watching sausage being made. Having grown up on a farm whose family made their own sausage and also having participated in the legislative process from three different vantage points, I would suggest that the process of making sausage is no less repugnant, clearly more expedient and the final product exceedingly superior.

Thus, it would be easy to surmise that prospects for any tangible improvements in dairy policy are a long way off. And they will be unless the dairy leaders of this country are willing to step up and become more pragmatic and provide the leadership necessary to reach a consensus of these policy issues.

Again quoting Bob Rumler, "Qualities of statesmanship must prevail to a far greater extent in those who espouse dairy leadership, in the industry as well as elsewhere in the process."

What that means is that dairy farmers and dairy processors, cooperatives and proprietary firms, must each be willing to talk and work together before rushing off to Washington. It means that we must cease and desist from this internal warfare that has permeated the industry.

Dairy processors have been and are willing to work with dairy farmers. We have a relationship that does not allow either of us the luxury of ignoring each other's interests. In order for dairy farmers to be reliable suppliers they must have a reasonable price to stay in business. Likewise, dairy processors must also earn a reasonable return on their labor and investment, if they are to survive.

The challenges that I mentioned earlier are enormous. Let me attempt to address some of the most controversial issues that the industry will face over the next few years.

INTERNATIONAL TRADE REFORM

After more than five years of negotiations, it now appears likely that the Uruguay Round of multilateral trade negotiations will break the stalemate and reach a framework agreement on agriculture and allow the remaining trade sectors to also complete their negotiations.

This will be a tremendous breakthrough for U.S. agriculture and will begin the process of gradually reducing trade-distorting domestic and export subsidies and the substitution of tariffs for non-tariff border barriers. In addition, the agreement will allow selected international scientific organizations to harmonize sanitary, phyto-sanitary standards and food safety regulations and resolve disputes within the GATT.

The negotiations will now focus on which domestic and export subsidies will be subject to cuts and which will be exempt. For those that will be reduced, the key issues will revolve on agreeing on the base year for calculating the reductions, the time period over which the reductions would be implemented and whether the reductions are based on volumes of trade affected or in terms of budgetary expenditures. Likewise, the process of tariffication will involve negotiations on the methods by which tariffs will be progressively lowered and the structuring of adequate safeguards.

An outline or framework of an agricultural agreement could be reached by the end of the year and a vote before the Congress on the total trade package could occur before the November 1992 elections. It will be approved by the Congress if only because the alternative of impending trade wars are unsustainable. Much is at stake as agriculture is but one of the several major areas that encompass intellectual property rights, services, market access, textiles and clothing, investment measures, among others.

The U.S. government is struggling with a massive budget deficit. The European Community has been forced to consider reforms of its Common Agricultural Policy as its budget increased 30 percent from last year to \$40 billion. At the same time, the Eastern European countries and now the Soviet Union are making the difficult transition from Communist government controlled states to democracy and free market economies. Developing countries need to generate income and participate in international trade. The political and economic realities suggest that protectionism must be dismantled and trade liberalized.

More importantly, a successful Uruguay Round agreement will lay the groundwork for completion of a North American Free Trade Agreement with Mexico and Canada, possibly in 1993. The previous U.S.-Canada Free Trade Agreement essentially deferred dairy trade issues to the GATT negotiations. With a successful GATT round agreement, it can be expected that reductions of trade barriers on dairy products with Canada could and should be included in a NAFTA.

The U.S. dairy industry must be prepared to adopt policies that will conform with the GATT rules and allow participation in international markets. We are becoming part of a global economy whether we like it or not. Moreover, by "leveling the playing field" a successful Uruguay Round will have significant impacts on several other major issues that will affect the dairy industry: price volatility, reform of the Federal Milk Marketing Orders and M-W price series, and supply management.

PRICE VOLATILITY

Both producers and processors, particularly over the last 2½ years, have expressed concern over the volatility exhibited in commodity prices. The argument has been made by some that the ratcheting down of the dairy support price over the last five years has been responsible for this volatility. However, an objective evaluation reveals that these rapid price movements have been the result of several obvious factors that are independent of the level of dairy price support.

First, the implementation of the whole herd buyout resulted in a \$0.93/cwt. increase between March and November 1986, which was then the largest seasonal price increase on record. Second, the severe drought of 1988 pushed milk prices up \$0.94/cwt. between April and December of that year. Third, as I mentioned earlier, the worldwide shortage of nonfat dry milk coupled with a wet spring resulted in tight supply conditions in 1989. Finally, strong demand for cheese during much of that 2½ year period helped keep milk prices at levels well above the support level.

U.S. agriculture, including the dairy industry, no longer can operate independent of the rest of the world. The recent movement toward market domination of the previous controlled economies of Eastern Europe and the Soviet Union and the economic strengthening of Europe next year when it opens its borders and takes on a U.S. style economy will have a direct impact on the dairy industry.

Yet the argument continues to be made by some that higher price supports are needed to provide price "stability" and a reasonable degree of price assurance to producers. We need to remember that the primary objectives of the dairy price support program are to assure an adequate supply of milk and act as a safety net to farmers. The program is designed to undergird the market and keep dairy products as competitive as possible. It is not designed to establish market prices nor necessarily ensure that they will not experience volatility.

Higher support prices will not insulate the dairy industry from the price impacts of policies or economies of other nations or changing weather conditions. Past efforts to implement supply management alternatives have exacerbated the volatility of prices rather than stabilizing them.

In my view, price volatility will continue to be a fact of life for the dairy industry. If one agrees with that hypothesis, the obvious question becomes how can producers or processors survive the price uncertainty? One way is to look for an alternative broader based pricing mechanism such as a futures market for dairy products. The Milk Industry Foundation, the National Cheese Institute, and the International Ice Cream Association are working with the Coffee, Sugar & Cocoa Exchange in examining the feasibility of developing a futures contract for dairy products.

Futures contracts are contracts for delivery of a specified volume of a standardized commodity at some future date. A futures contract would provide opportunities for hedging by taking a futures market position as a temporary substitute for a position in the cash market for the commodity. For

example, a cheese manufacturer, anticipating the sale of cheese in 6 months, could sell (short) futures contracts for delivery over the same time period at a specified price. Six months later, if the cheese price is below the price locked in earlier, the manufacturer could simply deliver the contract. However, since futures contracts are seldom used for delivery, the manufacturer would likely sell the cheese at the lower price and offset the futures contract sale with a purchase contract. Adding the profit from the futures market transaction to the lower cash market price would yield about the same price that was locked in the original contract.

Conversely, if the futures contract price moved above the locked in price, his offsetting purchase contract would result in a loss. However, since the cash market price would be higher, the net price should equal the original locked in price.

A futures market would be effective in protecting manufacturers' inventory positions. Product users could benefit by fixing ingredient costs. Producers could benefit because their cooperative or plants they deal with could lock in a price for cheese and forward contract for milk at a price consistent with the futures price.

REFORM OF THE FEDERAL MILK MARKETING ORDERS AND M-W PRICE SERIES

In addition to facing the challenge of price volatility, the dairy industry must come to terms and make some hard decisions in reforming Federal Milk Marketing Orders and developing a replacement for the Minnesota-Wisconsin price series.

Senator Richard Lugar (R-IN), in a recent well-publicized letter to Secretary Madigan challenged the Department to boldly propose the removal of many of the distortions in Federal Milk Marketing Orders that, in his view, have played a significant role in creating the inefficiencies and long-term incentives for surplus production.

Senator Lugar states that marketing orders are part of the problem and questions whether they are justified at all in today's world. He notes that the structure of the current marketing orders discourages the use of various technologies such as reverse osmosis. Reconstituted milk is discouraged because of the continued use of down allocations and compensatory payments. Paying premiums for higher butterfat content is counterintuitive when it is in chronic surplus. He openly questioned whether Class I differentials or classified pricing are even needed to appropriately price milk and dairy products.

Responding to the national hearings held last fall on pricing under federal milk marketing orders, the Department recently announced that it is recommending that all milk marketing orders be amended to adopt the three-class pricing system prevalent in most orders. In addition, they recognized the arguments made for reconsidering the extra charge imposed on reconstituted milk and recommended that concentrated and nonfat dry milk shipped between markets and reconstituted for Class I be treated similarly to transfers of whole milk.

To his credit, Secretary Madigan went beyond this first step and reopened the hearings and posed many of the hard questions Senator Lugar and others have raised. With a successful GATT round, Federal Milk Marketing Orders must be looked at from the context of whether the structured

classified pricing system currently in place makes sense or will even be in conformance with international obligations.

Like it or not, the current structure of Federal Milk Marketing Orders must and will undergo significant reform. It is up to the entire dairy industry to decide whether they want to play a constructive role in shaping these changes or remain divided and let others determine their outcome.

Equally important is the need to reform the current Minnesota-Wisconsin price series. The Department has stated the M-W price series will not be viable from a statistical standpoint beyond mid-1992. The Department was to reveal the results of its report that analyzed several alternatives on October 1. Unfortunately, that report has been put on hold. Valuable time has been wasted. The industry needs to evaluate the alternatives and provide input to the Department.

Senator Lugar also noted that, while establishment of a new M-W price series is distinct from milk marketing order reform, they are, in reality, inseparable. Moreover, he noted that because dairy markets tend to be thin with few participants and imperfect price discovery, producers have little opportunity to engage in forward pricing. That inability, in his view, is because of the lack of a futures market for dairy products. He further suggests that mandating minimum price relationships between milk put to various uses has discouraged the development of futures contracts.

Clearly, these issues have lingered much too long. Without squarely addressing them through the regulatory process, we can continue to expect these issues will be put before the Congress to settle disagreements. The experience of mandating increases in Class I differentials in the 1985 Farm Bill and prohibiting states from having a higher "make allowance" than under the Federal program has been counterproductive and only further fueled animosity among various regions.

The Department needs to continue to take the initiative and propose pragmatic and sensible reforms. The dairy industry needs to coalesce and develop a framework of support to implement the changes.

SUPPLY MANAGEMENT

In addition to relearning the lesson of instituting above market-clearing support prices, many in the dairy industry would be well-advised to rethink their views on supply management. Those who have strongly advocated supply management have pushed for permanent bases and quotas. The Administration, Congress, many in the dairy industry and agriculture in general have rejected this approach. This was reconfirmed again this year. Indeed, the use of a voluntary diversion program and a whole herd buyout were reluctantly implemented because there was no consensus of support for mandated supply controls. Each of those programs have deficiencies and have proved to be disruptive to the industry.

The use of quotas or bases or a two-tier pricing system is predicated on artificially restraining production and setting a higher price. They would impose inefficiencies in the industry and would drive milk prices to processors and to consumers higher than they would otherwise be.

Any form of mandatory supply controls, whether in the form of quotas or two-tier pricing would be a significant step backwards for the dairy industry. Two-tier pricing, for instance, would be mimicking exactly what we are trying to convince the European Community to abolish in the GATT

negotiations. Indeed, such a program will probably not comply with the requirements of a successful Uruguay Round.

The most recent initiative to raise the support price and implement a milk diversion provision will only result in having the most efficient producers responding to the higher supports and bury us with products. That, in turn, will result in calls for tightening the diversion program to reduce the chronic surplus. The effects of larger reductions (and assessments on nonparticipants) coupled with reduced consumer demand will result in reduced producer returns and will create political pressure to further increase support prices to offset the decline.

Future dairy policy will not be able to accommodate all high cost producers any more than the marketplace will allow high cost manufacturers to stay in business. And quotas will not be the salvation for preventing farmers from going out of business. All one has to do is look across the border at the Canadian experience. The August 1991 issue of DAIRY TODAY contained a special report on various global views on dairy quotas. The report noted that between 1966 and 1989, the number of dairy farms in the province of Ontario decreased 69 percent from 30,773 to 9,408. In comparison, in the state of Michigan the number of dairy farms declined 67 percent from 19,946 to 6,500. Similarly, in Wisconsin the number of dairy farms declined 59 percent from 82,000 to 34,000 over the same time period.

However, one way to provide a transition to that group of producers is to provide for direct payments to compensate for their inability to produce at market-clearing prices. This is consistent with the approach in place under the wheat, feedgrain, cotton and rice programs. It is also the approach under consideration by the European Community to reform their Common Agricultural Policy.

Some have also suggested that a limited whole herd buyout should be an alternative that could be a viable option to provide a transition for inefficient farmers to exit the industry. If the volume is limited and timing spread out, even the cattlemen should not be opposed to this option.

We have to realize that major breakthroughs in technology will continue to reduce the cost of producing milk. Areas such as animal nutrition, genetics, disease control and improved management practices will result in increased efficiencies for dairy producers. We cannot stop this technology nor should we. U.S. dairy farmers are competitive and most want this technology and will adopt it.

Moreover, no matter what we attempt to do through supply management, we will never overcome economic forces. And the economic forces now facing us are global not just domestic.

More importantly, I believe that most farmers want to be free to make management decisions on herd size and volume of milk they produce. Clearly, the innovative and productive producers want no part of quotas and their attendant costs. Many dairy farmers are beginning to openly question the dairy policy of this country.

One poignant example is a recent letter published in the Wall Street Journal from Hannah B. Lapp, a dairy farmer in Cassadaga, New York. In it she notes that dairying is simply a business like any other and that most dairy farmers are like entrepreneurs everywhere, particularly when there are times when it is difficult to make net profit from their investment. She states that once dairy farmers started depending on government subsidies instead of their own resources they developed a dependency hard to break.

Comparing dairy farmers with grape growers, she notes that faced with a flooded market, the grape growers "will review their marketing policies and then decide how many vineyards they can afford to maintain. Dairymen faced with a negative market will turn to the one marketplace with its doors wide open — that of politics." Elaborating further, she stated, "Dairy farmers are fond of noting that all they are asking for is a 'fair' price for their milk. Businessmen know that the only fair price for their product is the one that convinces their customers to buy."

"Personally, I feel that milk is one of the best bargains in food. I can try to convince our customers of this by forcing our price onto them by law. Or I can choose the means employed by the most successful of American industries: product research and development, advertising and offering competitive prices."

She acknowledges that many dairymen are too mistrustful of the industry even to ask the government to withdraw its intervention, noting that some say solve our problems with supply management or a system of controlling milk production with quota allotments while others say just set prices higher.

Finally, she states, "But there's another voice arising out of the clamor — one generally discounted in the halls of Washington and not thrilling enough to make the news. It's the voice of dairymen who want government out of milk marketing, out with every bit of its complicated price supports, market orders, and supply-control schemes. We're tired of scheming against our customers because successful business don't do that. We've observed the prosperity of the free sectors of agriculture and we want to be among them. We just want to be allowed to get down to business — the business of producing and selling milk."

CONCLUSION

In my view, the U.S. dairy leaders have received a clarion call from farmers, processors, consumers, the Administration, and Congress that business as usual is not acceptable. More important, I am concerned that the dairy industry, as an industry, is vulnerable and ill-prepared to effectively address the challenges that lay before it. The world is changing at a dramatic pace. International trade reform, for all intents and purposes, is an economic and political necessity. U.S. dairy programs and policies will have to conform with international obligations. The role and responsibilities of the Federal government are going to change and, in terms of budgetary support, likely diminish over time. In the end, economic forces will always prevail and price volatility will not be stabilized by high price supports, quotas and bases or restrictive milk marketing orders.

The entire dairy industry must come together and rationally discuss our differences and concerns and make an effort to form a consensus on long-term dairy policy. The status quo is no longer acceptable. Everyone must step up and show stewardship in meeting the responsibilities of providing leadership in the industry. We can do no less.

Dr. Donald Paarlberg, a former alumnus of this great institution and one of the most cogent thinkers in agricultural policy, coherently addressed the issues agriculture would face in his 1980 book **FARM AND FOOD POLICY: ISSUES OF THE 1980'S**. In it he noted that agriculture has lost its uniqueness and has become less a way of life and more a business like other businesses. As a result, it has increasingly had to give up its claim to special treatment.

He identified the issues of public policy that would affect American agriculture in the 1980's: commodity programs; price control; the consumer movement; the environmental movement; domestic food programs; occupational safety and health; the use of land, water and energy; the decline of the family farm; the rise of agribusiness; the role of the Department of Agriculture; and international trade policy.

He noted that farmers and non-farmers have more in common than they have in opposition. Confrontation has often been the strategy employed by both groups. However, he pointed out that farmers, with their declining numbers and eroding political power, can only lose by such strategy.

He concluded with a powerful message. "For a hundred years farmers had the policy initiative. They called the signals, moved the ball, and put points on the scoreboard. But sometime during the past fifteen years there was a turnover. Like it or not, farmers must now play defense. There is one thing worse than losing the ball; that is to lose the ball and think you still have it."

The dairy industry is indeed precariously close to losing the ball. The choice is ours. Thank you!

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RAILROAD TRANSPORTATION OF U.S. GRAIN TO MEXICO

Drew R. Collier
Assistant Vice President-Grain and Grain Products Union
Pacific Railroad Company

One of the primary markets for U.S. grains is Mexico, a market that is considered both by the grain industry and the railroads as a key growth opportunity. The North American Free Trade Agreement has the potential to enhance this growth opportunity and, therefore, is being viewed with considerable interest. The railroads will play a critical role in this opportunity.

The purpose of this presentation is to review the role rail transportation plays as a vital link between the producers and merchandisers of grain in the United States and the end users in Mexico. In reviewing this role, it will be important to examine not only what has been done to date to facilitate the efficient movement of grain, but also what yet remains to be accomplished. While these comments will focus on the Union Pacific and it's role, they in many ways can be applied to other railroads serving the Mexico marketplace.

First let's look at how the Union Pacific is positioned to play a key role in moving the grain to market. The UP is a 22,000 mile system, stretching from Chicago and New Orleans on the east to Seattle and Los Angeles in the west. We operate in 19 states and are strategically located to link Mexico with the United States and Canada. Union Pacific directly serves the border gateways of El Paso/Juarez, Brownsville/Matamoros and the most important gateway, Laredo/Neuvo Laredo. We also connect directly with Canadian Pacific Rail System at Eastport, Idaho. We connect with the Canadian Pacific's interior gateways of Kansas City and Chicago and with the Canadian National/Grand Trunk System also at Chicago.

Union Pacific directly serves the grain and oilseed producing states of Nebraska, Kansas, Oklahoma, Texas, Missouri, and Illinois. We also have important rail connections with those railroads serving Iowa. From the heartland of America, we provide the most direct single line route to Laredo, the gateway closest to the population centers of Mexico. While the Union Pacific is the number two grain-hauling railroad in the United States, it is the leading grain handler to Mexico. In 1990, Union Pacific's revenue from the handling to Mexico of grain, grain products, oilseed and oilseed products, amounted to \$30 million. In terms of volume, Mexican grain and oilseed shipments represented 15,000 carloads. These figures do not include grain shipments which may have been handled to gulf ports for trans-shipment via water into Mexico. Grain is the single largest export commodity handled by Union Pacific to Mexico.

In addition to grain and oilseeds, Union Pacific also handles other agricultural products to Mexico, although in smaller volumes. This would include animal byproducts, such tallow, and rice, dry beans, cotton and powdered milk. As a side note, nearly all of the powdered milk originates in Canada.

Given Union Pacific's strategic role in the movement of agricultural products from the United States to Mexico, it will not come as a surprise that we actively support the Free Trade Agreement. With a Free Trade Agreement and the elimination of tariffs and quotas, U.S. agricultural exports to Mexico will further increase grain and oilseed movements from America's Heartland. While some international markets for U.S. Grain come and go, Mexico represents a continuing on-going customer for our grain.

IMPROVEMENTS IN TRANSPORTATION INFRASTRUCTURE

While the growth opportunities may be significant, without an efficient transportation system, successful implementation of a Free Trade Agreement cannot be possible. Free Trade, without the transportation infrastructure to handle the increased trade could have nightmarish consequences, as anyone who remembers the days of railroad embargoes at the border crossing can attest to.

To appreciate what progress has been made we must turn to the improvements that have been made to the transportation infrastructure. The Union Pacific has been working methodically for some time to eliminate the barriers which prevent efficient transportation between the United States and Mexico. Problems of capacity, infrastructure and Governmental procedures have, at times, all combined to result in catastrophic congestion. Long before the Free Trade Agreement was progressed, we recognized it was necessary to eliminate or reduce these barriers if we were to

grow our market share in Mexico.

One cause of repeated congestion at the border was the lack of sufficient locomotives on the Ferrocarriles Nacionales De Mexico (FNM). This shortage prevented them from being able to pull traffic away from the border in a timely manner. Therefore, in 1989, we signed an agreement allowing our locomotives to operate through the border and onto the FNM. Solid grain trains were at first the primary recipients of this new arrangement. Additionally, we have entered into leasing arrangements with the FNM for our locomotives, to be used by the FNM on their system, primarily serving the import/export corridor through Laredo. This lease arrangement has provided as high as 100 locomotives to the FNM, and with the recent improvement of the FNM's own fleet, now stands at 30 locomotives.

Earlier this year, we implemented a change in the customs clearing process at the border. These new procedures, referred to as Despacho Previo, changed the procedures at the border by forcing shippers, brokers and Mexican customers to significantly expedite the clearing of traffic with Mexican Customs well before cars reach south Texas. As a result, we now form solid trains, classified by destination groups within Mexico and deliver trains, rather than cars, to the FNM. Further, the FNM no longer has to switch these cars on the Mexican side of the border, since this has previously been accomplished by the Union Pacific at Fort Worth and San Antonio.

The result is that service has been improved for our customers in both the United States and Mexico. Turn-around time on covered hoppers, a constrained resource, has diminished, effectively enlarging our fleet without additional investment. Perhaps most importantly, with these new processes and operating changes, we and the FNM are handling at least 50% more traffic today than we ever thought possible, and we're doing it with improved service to our customers. The astounding fact of this accomplishment is that this was done without any capital investment.

The most recent change is in the revision to the waiver of per diem to the FNM, which became effective December 1. The FNM collects a per diem surcharge on all loaded U.S. and Canadian owned equipment entering Mexico on the premise that car hire costs are not included in their rates. This charge is paid by the Mexican receiver through his broker at the border crossing. FNM charges have escalated well beyond their actual exposure and have in some cases discouraged the use of rail into Mexico. Therefore, over the past four to five years, Mexican receivers have requested the U.S. railroads waive collection of per diem due from the FNM, thus eliminating the receiver's need to pay the FNM.

Over a period of time, we have selectively waived per diem to FNM based on the receiver, commodity or car ownership. In some instances, we collected the per diem directly from the receiver. In other cases, we waived per diem to the FNM but collected nothing from the receiver. Due to a growing recognition for a simple, understandable policy we have revised our per diem procedures. We will waive per diem to the FNM and collect instead a per diem charge from the Mexican receiver paid at the border crossing by the receiver's broker in advance of the crossing of the car. Credit will not be extended for the per diem charges. The charges to the receiver will be based on precise historical data for cycle times in Mexico by destination. As an example, we will charge \$200 for a covered hopper car destined Guadalajara. This is an effective reduction of \$240 from the FNM's previous charge of \$440.

Additionally, we will be responsible to remit on a timely basis per diem payments to U.S. and Canadian roads whose cars were delivered by the UP to the FNM. We believe these new procedures will reduce the cost of rail transportation for shipments into Mexico and provide for more consistent and understandable provisions.

PRODUCTIVITY GAINS TO BE MADE

Even though much has been accomplished, there are still many areas where productivity and efficiency of the transportation infrastructure can be improved. This remaining work will take both capital and innovation, but will be critical to maximizing the opportunity.

The FNM is continuing to upgrade their railroad south of San Luis Potosi to permit U.S. shippers to load grain in covered hoppers to same limits as exist in the U.S. While the main line and much of the branch lines on the FNM are in excellent condition, work still needs to be done on some track and bridge structures, to permit loading to 263,000 lbs., gross weight on rail. It is our understanding that loading to these limits is allowed today to Mexico City and on a permit basis to other areas, such as Guadalajara.

The FNM lacks a unified computer and telecommunications system with which to manage their railroad and provide customers with real time information. Union Pacific has entered into an agreement with the FNM to provide system development for a totally new computer system, which should be implemented next year. This modernization will be a critical and strategic development in the FNM capabilities. We expect to expand our involvement with the FNM in this area over the next several years.

We are close to a breakthrough on the establishment of through rates with the FNM on grain. These rates will

provide a single factor rate from U.S. origin to Mexican receiver on corn, milo, soybeans and wheat, and should reflect the efficiencies of unit train movements. We believe that these through rates will increase the competitiveness of rail shipments into Mexico versus water routes, as well as making U.S. grain more viable versus grain from other originating countries.

While some private sector receivers in Mexico do have high speed unloading facilities, there is substantial room for growth. In order to efficiently and quickly unload unit grain trains, and return them promptly to the United States, additional high speed grain handling facilities must be constructed. There are several groups or individuals interested in taking advantage of this opportunity and options are currently being explored.

Finally, we continue to hear rumors regarding the possible private investment in the FNM. This is prohibited today under the Mexican constitution. However, changes are rapidly occurring within Mexico, and it is at least feasible that in the future private investment could be permitted. The Union Pacific has started to work with the FNM to make investment in intermodal facilities to increase the transportation capacity. As the market opportunities continue to grow and private investment is encouraged, the Union Pacific will continue to review these options.

In conclusion, we have accomplished much in the last few years to strengthen the vital link that the railroad's provide. Certainly, much remains to be done in preparation for the Free Trade Agreement. Given the degree of cooperation we have experienced with the FNM, the Mexican government and our customers, we remain confident that we can meet the challenge.

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A VITAL LINK TO TRADE IN TREE FRUIT BETWEEN MEXICO AND CALIFORNIA IS TRANSPORTATION

Juan C. Batista

Associate Professor of Agricultural Economics
California State University, Fresno

A Summary

The tree fruit industry in California stands to gain from a Free Trade Agreement (FTA) between the U.S. and Mexico. However, the gains will not be a result of a FTA, rather a FTA will only expedite the opportunities that are already surfacing in Mexico: Oranges, lemons, grapefruit, apples, pears, apricots, peaches, nectarines, and plums are commodities grown in California that most likely will benefit from the market developing in Mexico, unless the Mexican trade infrastructure is not adequate to accommodate the larger volume of trade between the two countries. Evidence suggests that Mexico's infrastructure still needs a substantial upgrade to improve its efficiency.

Supply and demand conditions and seasonality in California and Mexico suggest that Mexico will be a net importer of tree fruit while California will be a net exporter to Mexico of the fruits mentioned above.

Statistics show that California has an advantage over Mexico in the production of peaches, grapes, apples, oranges, and lemons. California yields are superior to Mexican yields for most deciduous fruits. Returns per acre are better in California, for example, in the production of apples, oranges, and lemons, albeit average in costs are a bit lower in Mexico.

The demand for deciduous fruits in Mexico is also very good and growing. For instance, Mexico recently surpassed Canada as the number one world market for pears. Mexicans have always liked fresh fruits and this is likely to continue. Moreover, the economic conditions in Mexico have been improving since 1986; consequently, the demand for these products should increase correspondingly with the improvement in the Mexican economy.

A FTA should expedite these favorable trends in Mexico for fresh fruits. Trade between the U.S. and Mexico has been improving since Mexico joined the GATT. Lowering trade barriers and reducing tariffs further through a FTA could only improve the situation in the trade of tree fruits.

In order for these opportunities to be exploited however, there has to be an infrastructure in Mexico capable of handling an increased volume of trade. Currently, that does not seem to be the case. For example, there is not a single containerized port in Mexico; there is a limited number miles of rail in Mexico; Mexican roads cannot handle the weight of the heavy loads transported by trucks; U.S. trucking companies cannot deliver loads into central Mexico; the wholesale markets--which handle substantial volumes of fresh fruit--are improperly engineered; and the capacity for refrigerated storage is limited.

For Mexico to become a "real export opportunity" for California tree fruits, the Mexican infrastructure will need considerable upgrading. More than likely, the investment needed to do this will have to be shared between Mexican and foreign investors, unless the Mexican government commits national resources toward this end.

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THE OUTLOOK FOR U.S. WHEAT IN 1992 OR "A DRY YEAR IN KANSAS IS FOLLOWED BY . . .?"

Craig Jagger
Agricultural Economist,
Agricultural Stabilization and
Conservation Service (ASCS)¹

Introduction

A dry year in Kansas is followed by
[a] another dry year
[b] a wet year
[c] another year

For many years, this exam question was a staple in Stan Warren's farm management course at Cornell University. (For those who may be wondering, the correct answer is: [c].) While this question is especially relevant for production prospects for 1992, it also suggests another question: "What follows the 1991 wheat marketing year?"² Not surprisingly, the correct answer to this question is also [c].

¹I would like to thank USDA agricultural economists, Gerald R. Rector, Bradley Karmen, and Joy L. Harwood for their specific comments on this paper. I would also like to thank my colleagues who work on USDA's Interagency Commodity Estimates Committee (ICEC) for wheat for their general contributions to this paper. They are Gerald R. Rector, ICEC chairperson, and Andrew Aaronson of the World Agricultural Outlook Board; Bradley Karmen of the Agricultural Stabilization and Conservation Service; Edward Allen, Sara Schwartz, and Parveen Setia of the Economic Research Service; and Frank Gomme and Catherine Otte of the Foreign Agricultural Service.

²In this paper, the labels, "1992", "1992/93", "the 1992 marketing year", and "the 1992/93 marketing year" are interchangeable. All refer to the U.S. wheat marketing year that will begin on June 1, 1992 and end on May 31, 1993. Similar labels for other years are also interchangeable.

Halfway through the 1991 marketing year is an appropriate time to explore the outlook for wheat in 1992. Supply and use of wheat in 1991 set the stage for 1992--both through their determination of 1992 beginning stocks and as points of departure for discussing 1992 supply and use. So before discussing 1992--where are we in 1991?³

Where Are We in 1991?

Responding to the first year under 1990 farm legislation. The 1991/92 marketing year is the first under program provisions of the Food, Agriculture, Conservation, and Trade Act of 1990 and the Agricultural Reconciliation Act of 1990. The major change in program provisions from previous years involves "planting flexibility." Relative to a 15-percent ARP (acreage reduction program) in previous years, producers participating in the 1991 standard wheat program could plant more wheat without violating program contracts. Regardless of plantings, however, they will receive deficiency payments on fewer acres. Flexibility affected only about half of wheat producers in 1991 as a special winter-wheat option had different rules. The 1991 winter-wheat option is not available in 1992 so all participating wheat base acres will be covered by flexibility provisions.

Wishing that 1991 production had been better. Producers in 1991 harvested the second-smallest U.S. wheat crop since 1978. Lower harvested acreage (caused by a 15-percent ARP, winterkill and disease problems, among other factors) and lower yields (for some of the same reasons) are estimated to have caused the largest year-to-year U.S. production decline ever--or, at least since 1866, the first year of USDA records.

Drawing down the second-lowest wheat supply since 1976. Despite relatively low levels, 1991 total supply would have been even lower had not significantly higher beginning stocks partially offset the large production decline. Wheat and wheat product imports, while projected at a record level for 1991, did not change much from 1990. Projected imports constitute only about 1 percent of 1991's estimated total wheat supply; the proportion of total wheat imports that is wheat products or flour rather than grain is substantial.

Eating more wheat products than last year. Projected food use of wheat for 1991 is up very slightly from 1990. While the projected 4-million-bushel increase is a much smaller year-to-year increase than in recent years, it continues the long-term direction in wheat food use. This increase likely involves increasing health-consciousness as well as small increases in population increases. The food use projection for 1991, if realized, would be almost 200 million bushels higher than only a decade ago.

Feeding significant quantities of wheat but less than the record level in 1990/91. Last summer's weak wheat prices relative to corn and large quantities of low-quality soft red

³*Appendix 1 provides supply and use estimates for 1988 through 1991.*

winter wheat led to significant wheat feeding during the first quarter (June to August, 1991) of the 1991 wheat marketing year. Given the strength in wheat prices since last summer, little, if any, feeding of wheat is expected during the rest of the 1991 wheat marketing year. Tom Tice's paper provides a detailed analysis of the outlook for U.S. feed grains and feed use.

Seeding more wheat for next year's expected production increase. After extended discussion and heated debate, the USDA's wheat Interagency Commodity Estimates Committee in November increased projected seed use for 1991 by 2 million bushels over its October estimate--leading to a 7-million bushel, rather than a 5-million bushel, increase over 1990.

Exporting U.S. wheat through heavy use of Government credit and the Export Enhancement Program (EEP). Based on USDA estimates as of December 10, 1991, U.S. wheat exports for 1991/92 are forecast to be up by 157 million bushels or 15 percent from 1990/91. This estimate represents an increase of 100 million bushels over the November, 1991, USDA estimates and reflects expectations of increased U.S. exports due to increased Soviet export credits. Frank Gomme's paper provides a detailed analysis of the global outlook for grains. I will add a few observation about U.S. wheat exports in 1991.

Based on USDA's Export Sales report, exports plus outstanding sales for 1991/92 totaled 23.8 million tons (875 million bushels) as of December 5--about one-fourth above the pace of a year ago. As could be expected, the world's two largest wheat importers, the USSR and China, account for the gain. Spurred by U.S. credit guarantees, U.S. exports plus outstanding sales to the USSR to date are about 5 times as large as a year ago. Large purchases, many made before the 1991 marketing year began on June 1, have pushed U.S. exports plus outstanding sales to China to almost twice the level of a year-ago. Sales to the rest of the world are down slightly from a year earlier.

Because of large competitor supplies, the Export Enhancement Program has played a large role in sales to the USSR, China, and many other countries. During the June-October, 1991 period, EEP sales were more than double those for the same period in 1990. The average EEP bonus in October, 1991, at more than \$58 per ton, was half again as high as in June, 1991. Given large early-season sales and tightening U.S. supplies, the pace of U.S. wheat sales is expected to slow in coming months.

Heading toward sharply lower wheat stocks. Projected 1991/92 ending stocks at 414 million bushels are about 450 million bushels below beginning stocks. This level, if realized, would be the second-lowest level since 1952. During the 1952 to 1991 period, ending stocks were lower only in 1973.

Maintaining significant free stocks. About 40 percent of projected 1991 ending stocks are expected to be held outside of government-influenced storage programs (CCC inventories and the Farmer-Owned Reserve) and not under 9-month CCC loans. Based on this projection, a larger share of total supplies are "free," (i.e. readily available to the market) than in many previous years. For a given level of total stocks, higher free stocks tend to depress prices.

Even much of the government-influenced stocks are more available to the market than in some previous years. Under new Farmer-Owned Reserve (FOR) rules, 1990-crop wheat in the FOR can be redeemed at any time by producers without penalty. CCC wheat inventories largely are in the Food Security Wheat Reserve and can be accessed for food aid through a Presidential authorization, if needed. Further, loan rates are at levels relative to prices where producers are expected to repay 9-month loans rather than forfeit them into CCC inventories.

Facing wheat prices well below historical levels for projected ending stocks-to-use and free-stock levels. Wheat prices have rallied significantly since harvest-time lows but still are well below nominal levels for previous years with similar stocks-to-use and free-stock levels. Among factors that have affected U.S. prices are large competitor supplies, relatively low world prices, uncertainty over U.S. exports, and uncertainty on the magnitude of the expected production increase in 1992.

Where Can We Expect to Be for 1992? Examining Potential Acreage and Yield Impacts

USDA will not publish projections of 1992/93 supply and use until May, 1992. Still, I would like to make some comments on directions and rough magnitudes regarding expected acreage and yields and their impacts on the 1992/93 U.S. wheat balance sheet. Relative to 1991, then, where can we expect to be for 1992?

Continuing to respond to 1990 farm legislation. Wheat program provisions for 1992 announced as of mid-November are, with two exceptions, unlikely to have much impact on 1992 acreage and yields. The 1992 target price will continue at \$4.00 per bushel. The 1992 announced loan rate at \$2.21 per bushel, while \$0.17 higher than for 1991, is at a level that is unlikely to interfere with markets and prices. The two exceptions, both of which are discussed below, are the 1992 ARP of 5-percent and the unavailability of the 1991 winter wheat option which causes more acres to be covered by flexibility provisions in 1992.

Starting from lower beginning stocks. Beginning stocks are the one official estimate for 1992/93 available from USDA (because, of course, they equal ending stocks for 1991/92). In 1991, large beginning stocks partially offset significantly lower production.

For 1992, the opposite is expected with increased 1992 production offsetting, at least partially, low beginning stocks.

Counting Heavily on Production to Replenish Supplies. The projected low level of beginning stocks means that 1992 production will be an especially crucial determinant of 1992 total supply. Assuming the same level of imports and forecast beginning stocks, 1992 production will have to increase by 451 million bushels just for the 1992 supply to match 1991 supply.

Planting and harvesting more acres. Both planted and harvested wheat acres are expected to be up significantly in 1992. The major factor in the expected increase is the lower ARP (Acreage Reduction Program) for 1992.

Responding to a lower ARP. At 5 percent, the 1992 ARP is 10-percentage points below the 15-percent ARP of 1991. A general rule of thumb from my work at ASCS is that within a given "normal" year, a 5 percentage point reduction in the wheat ARP is estimated to increase planted wheat acres by roughly 2.5 to 3 million acres--more or less. If applied across years, this rough gauge would suggest an increase of 5 to 6 million planted wheat acres between 1991 and 1992 due to the 10-percentage-point ARP decline. Average rules and ratios, while useful indicators, are, of course, surrounded by large confidence intervals. Acreage in a specific year will depend on factors specific to that year. It is more likely that the expected increase in wheat planted acres after accounting for all factors will be more in the range of 3 million to 5 million acres.

Relative to a "normal" year, total wheat planted acres probably were overstated by at least 1 million acres for 1991. A much-larger-than-normal share of the white wheat crop was reseeded in the spring after winterkill problems wiped out the fall-planted crop. Other factors in addition to the ARP and the weather that affect comparisons of planted wheat acreage across years include program participation, new flexibility provisions, relative crop returns, decisions by non-program participants, and other factors, such as incentives for haying or grazing.

If the long-run average holds, about 87 to 88 percent of acres planted will be harvested.⁴ Then the year-to-year gain in harvested acres would be greater than for planted acres because 1991's harvested-to-planted percentage at 83 percent was lower. Weather can affect the harvested-to-planted percentage, however. For example, Kansas, typically the largest wheat-producing state, had emergence problems caused by early-season drought. As of November 24, 1991, only 85 percent of the Kansas wheat crop had emerged compared to the 5-year average of 95 percent.

⁴The weighted-average of acres harvested to acres planted for 1960 to 1991 is 87.6 percent.

Factoring in Flexibility. Expected market returns have always been important to producers' decisions on wheat-program participation and to plantings by non-participants. Market returns have become more important to program participants because of program flexibility provisions new for some producers in 1991.

Under the flexibility provisions, 15 percent of a producer's wheat or other base acres (called Normal Flex Acres or NFA) will not receive deficiency payments regardless of whether the acres are planted to wheat, planted to another crop, or idled. As compensation for the loss of payment acres, producers can plant most other program or non-program crops on wheat NFA without losing wheat base or can plant wheat on other-crop NFA and still be in compliance with the wheat program. Planting decisions on wheat or other-crop NFA likely are heavily influenced by expected market returns for wheat relative to other crops or to not planting the acres at all.⁵

In effect, flexibility provisions allow individual producers who are participating in the wheat program and have other crop NFA acres, to increase or decrease wheat acreage independent of ARP changes. The ability to increase wheat acreage while in the wheat program earning deficiency payments should help keep participation rates high.

Acres covered by NFA provisions are expected to double to about 10 million acres in 1992, as coverage expands to include acres enrolled in the 1991 winter wheat option. Based on the preliminary indications of the 1991 Final Enrollment Report, about 2.1 million acres of other crops were planted on wheat base in 1991 and 0.4 million acres of wheat were planted on other crop bases. Thus, the net impact of NFA provisions on crop switching is an indicated 1.7 million acres of other crops planted on wheat base.⁶ In addition, an unknown number of wheat base acres were likely idled due to NFA provisions.

Expecting returns to change. Because both NFA acres and non-participant acres are affected by similar factors, separate analyses of influences on producers' planting

⁵Producers can also forego deficiency payments on up to an additional 10 percent of their wheat base and plant another crop without losing base. This flex category is called Optional Flex Acres (OFA). For a detailed discussion of flexibility rules and impacts in 1991 see Randy Weber's paper, "How is the Farm Bill Working?" in the Outlook session of the same name. For a more general discussion of flexibility rules and a fuller explanation of program provisions under the farm bills, see U.S. Department of Agriculture/ Economic Research Service, "The 1990 Farm Act and the 1990 Budget Reconciliation Act: How U.S. Farm Policy Mechanisms Will Work Under New Legislation." Miscellaneous Publication Number 1489, December, 1990.

⁶Estimates in the 1991 Final Enrollment Report are an indication of producers' intended uses of flexibility when they signed up in USDA's commodity programs last spring. What they actually did may have varied from their intentions. USDA's 1991 Compliance Report, likely available early next year, will provide more detailed information on producers' actual plantings under flexibility provisions.

decisions for these acres for the 1992-crop are not needed. Most winter-wheat producers have planted their 1992 crop, though. Factors at planting time that influenced their planting decisions are in the (very recent) past. USDA estimates of winter wheat seedings for the 1992 crop will be available in January, 1992. Since spring-wheat producers will not plant their 1992 crop until next spring, price relationships at that time will be among the factors that will influence their planting decisions.

??? Planting more wheat on NFA ??? Arguments supporting increased plantings of wheat on NFA or non-participant acres emphasize relatively larger expected returns to wheat for 1992 and a continuation of established crop rotations and other cultural practices. Wheat prices have increased significantly--both absolutely and relative to other crops--since their July, 1991 harvest-time lows.

For winter-wheat producers, prices this year in August and September were higher while corn and soybean prices were lower than a year ago. Last year, wheat prices trended downward during the year, while this year, wheat prices have trended upward. Spring wheat prices are likely to be higher next spring than a year earlier, too. Farm prices for spring wheat have strengthened since harvest but new-crop futures for spring wheat (as well as winter wheat) have been lower than for nearby months.

??? Planting less wheat on NFA ??? Arguments supporting reduced plantings of wheat on NFA or non-participant acres emphasize changes in producers' expected returns other than from market prices. Producers in some soft red winter wheat areas have had two years of poor yields from disease and/or winterkill problems and they may have lowered their expected yields and actual plantings. Winter-wheat producers in parts of the southern Plains who faced very poor planting conditions during this fall's major planting months may have idled more wheat land than they normally would have. A combination of the loss of fall grazing, uncertain yield prospects, and the first-year loss of deficiency-payment returns under NFA (because there is no winter wheat option for 1992) likely convinced some producers to plant less wheat. Producers in marginal continuous cropping/summer fallow regions especially may fallow some of their poorer land because of the loss of deficiency-payment returns.

Not all acres counted as idled under NFA provisions can be considered a response to NFA provisions, though. In a complete acreage accounting system, some traditionally underplanted acres that would have been idled in previous years would be counted as NFA acres even though they were not a response to NFA provisions.

Although it is unclear whether wheat planted on NFA will increase or decrease from 1991, wheat plantings in 1992 likely will continue the indicated 1991 result--less

wheat planted with flexibility provisions than without flexibility provisions. The loss of deficiency payments on flex acres is expected to cause lower wheat acreage and thereby temper the expected increase in wheat acres caused by the ARP reduction.

Exploring other program possibilities. Other program provisions may also affect producers' wheat planting decisions. For example, under the 0/92 program, producers who idle additional base acres can receive deficiency payments on a portion of the idled acres.

The 0/92 program is especially attractive for producers facing poor planting conditions (as some southern Plains producers did this fall), who plant crops that later fail, who want to graze their wheat, who expect that the 0/92 guaranteed deficiency payment rate will be large, and/or who expect that loan guarantees or prices for minor oilseeds will be attractive relative to wheat prices. (Provisions new in 1991 allow producers to plant minor oilseeds on 0/92 acres and receive their choice of 0/92 wheat payments or minor-oilseed marketing loans. An indicated 0.3 million acres of minor oilseeds were planted on wheat 0/92 acres).

The crediting of acres to 0/92 under NFA provisions effectively requires producers using 0/92 on a farm to either idle their NFA acres or to plant them to a crop other than wheat. Over 5 million wheat base acres were credited to 0/92 in both 1990 and 1991 and changes from 1991 in 0/92 acres may affect 1992 planted acres, harvested acres, or both.⁷

Hoping that better yields will also add to production. Given rough projections of 1992 harvested acreage, a 3-bushel increase in the national-average yield is roughly equal to the production on 5 million harvested acres. A return to national trend yields in 1992, then, would contribute significantly to increased production because 1991's estimated national yield at 34.3 bushels to the acre was somewhere between 2 to 4 bushels below a simple trend-yield.

The winter wheat crop did not have a promising start this fall, however. Kansas, typically the largest wheat-producing state, had a dry year in 1991. Through October 26, during a time when Kansas's 1992 wheat crop should be establishing itself, parts of Kansas had gone over 40 days without measurable precipitation. It is unclear whether 1992 will be a wet or dry year for Kansas but substantial precipitation has occurred since late October. While 58 percent of the Kansas wheat crop was rated poor to very poor for the week ending November 10, 1991, the *Crop Progress* report for the week ending November 24, 1991 showed 41 percent of the Kansas wheat crop in these categories.

⁷See the paper by Randy Weber noted in footnote 5 for additional details on 0/92 and for other program provisions that provide flexibility to producers.

Making other adjustments if necessary. If production did not replenish or increase supplies to or above 1991 levels, other adjustments in the wheat balance sheet would occur. One important adjustment opportunity is in wheat feed use. Wheat feeding during the short-supply years of 1988 and 1989 was about 200 million bushels less than wheat feeding during 1991. High wheat prices relative to corn prices during next summer would discourage wheat feeding and would free up wheat for other uses.

Weather, Prices, and Conclusions on "The Outlook for U.S. Wheat in 1992"

It is clear that many factors affecting next year's wheat prices remain as uncertain as next year's weather. And, according to Will Rogers, "Two types of people predict the weather in Oklahoma--fools and newcomers."

Because of low beginning stocks, 1991 production will be extremely important to 1992 supply. New-crop supply and use factors will be especially important for establishing 1992 prices. Weather and its impact on U.S. wheat production is probably the most uncertain factor on the supply side of the U.S. wheat balance sheet for 1992/93.

The major uncertain factors that will determine the demand for U.S. wheat in 1992/93 are mostly global ones--the economic, financial, and political conditions in the USSR, the availability of U.S. financial assistance, and, not surprisingly, weather in other countries. Weather also affects the supply of corn and other feed grains whose availability and prices--especially during next summer--will affect U.S. wheat feed use.

While I was addressing a farm group recently, one farmer commented, "Farmers aren't the only ones who hedge." Perhaps my response--which was to laugh--was as good as pointing out that analysts and farmers all hedge for the same reason--to minimize the costs of positions we take based on incomplete information.

In this preliminary (and, in the final) analysis, a modification of a recent letter published in *The Washington Post*--(all right, I'll confess, it was in Ann Landers' column)--may provide a useful closing comment: **Despite the many analytical tools--sophisticated and otherwise--that we can bring to bear on projections, we must accept the fact that the supply, use, and price of wheat in the United States for 1992 will be determined by a thin layer of topsoil and the fact that it rains--or doesn't.**

APPENDIX 1
U.S. WHEAT SUPPLY, USE & PROGRAM VARIABLES
MARKETING YEARS 1988 TO 1991 1/

MARKET YEAR:	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991P</u>	<u>1992P</u>
WHEAT BASE (Mil. ac.)	84.8	82.3	80.5	79.3	
ACREAGE REDUCTION (ARP)	27.5%	10.0%	5.0%	15.0%	5.0%
PARTICIPATION	85.9%	78.2%	82.9%	85.2%	
TOTAL BASE IDLED (Mil. ac.)	29.6	18.4	17.8	25.8	
Annual Idled	22.5	9.6	7.5	15.4	
ARP ACR	19.2	6.1	2.2	10.1	
0,50/92	3.3	3.5	5.3	5.3	
CONSERVATION RESERVE	7.1	8.8	10.3	10.4	
ACRES (Mil.)					
PLANTED ACRES	65.5	76.6	77.2	69.9	
HARVESTED ACRES	53.2	62.2	69.3	57.7	
Harvested/Planted Ratio	81.2%	81.2%	89.8%	82.5%	
YIELD, Harv (Bu.)	34.1	32.7	39.5	34.3	
Yield, Program (Bu.)	34.9	34.3	34.1	34.3	
Begin Stock (Mil bu.)	1,261	702	536	866	414
Production	1,812	2,037	2,736	1,981	
Imports	23	23	37	40	
TOTAL SUPPLY	3,096	2,762	3,309	2,886	
Food	726	753	796	800	
Seed & Industrial	103	100	90	97	
Feed & Residual	146	139	489	350	
Total Domestic	975	992	1,376	1,247	
Exports	1,419	1,233	1,068	1,225	
TOTAL USE	2,394	2,225	2,444	2,472	
ENDING STOCKS (Mil bu.)	702	536	866	414	
CCC-Owned	190	117	163	150	
Farmer-Owned Reserve (FOR)	287	144	14	75	
9-Month Loans Outstanding	19	30	217	20	
Other	206	245	170	169	
"FREE" STOCKS (Mil. bu.)					
End Stocks - CCC	512	419	703	264	
End Stocks - CCC & FOR	225	275	689	189	
End Stocks - CCC, FOR, & 9-Month Loans	206	245	472	169	
STOCKS/USE	29.3%	24.1%	35.4%	16.7%	
MARKET YEAR PRICE (\$/bu.)	3.72	3.72	2.61	2.85 - 3.05	
5-month price	3.54	3.78	2.72	2.65	
Target Price	4.23	4.10	4.00	4.00	4.00
Basic Loan Rate	2.76	2.57	2.44	2.52	2.58
Announced Loan Rate	2.21	2.06	1.95	2.04	2.21

1/ As of December 10, 1991.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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Outlook '92

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PROSPECTS FOR THE U.S. FEED GRAIN SECTOR¹

Thomas F. Tice
Agricultural Economist
Economic Research Service

Introduction

Unless you are a modern day Rip Van Winkle, you are obviously aware of the political and economic changes occurring around the world. A perusal of this conference's schedule brings these issues (GATT, environment, nutrition, etc.) to the forefront, since many sessions are devoted to their discussion. In such a dynamic and uncertain environment, it is critically important for farm and business managers to have a good understanding of the driving forces in the economy, and how technology and policy issues potentially affect your markets now and in the future. Today, I will focus on the situation and outlook for the feed grain sector and try to give you a sense for how the upcoming year is to unfold.

In any analytical exercise, critical assumptions or postulations concerning policy and other undetermined events must be made in order to narrow the range of possible outcomes. I will do my share of postulating, but I hope to leave you with a sense of how the markets will react under several "reasonable" scenarios. My goal is that, as events unfold, you will be able to anticipate their impact on the markets and make appropriate adjustments to your business plans.

Let me first focus my remarks on the current situation to set the scene for discussing the 1992/93 outlook and beyond.

Market Outlook for the Remainder of 1991/92

To develop a sense of future market directions, an understanding of the current situation is critical. The world feed grain situation is discussed to develop the environment in which U.S. feed grain exporters are operating, followed by a discussion of domestic supply and demand factors, leading to a forecast of 1991/92 feed grain prices.

¹I would like to thank USDA agricultural economists, Joy Harwood, Jerry Rector, Phil Sronce, Larry Van Meir and Paul Westcott for their specific and helpful comments on this paper.

Foreign Coarse Grain Situation

Foreign production of coarse grains is forecast to drop 25 percent in 1991/92 to about 583 million. The most notable change is expected in the Soviet Union, generally one of the largest foreign producers, where the coarse grain crop is forecast down over 25 million from its excellent 1990 crop. In contrast, Eastern Europe production is forecast up 18 percent, as improved growing conditions boosted yields. Higher average corn yields in France, which rebounded from a severe drought a year ago, is largely responsible for a 5 percent increase in EC coarse grain output.

Foreign use of coarse grains in 1991/92 is forecast to fall around 2.5 percent to approximately 628 million tons, the lowest since 1986/87. However, the forecast drop of almost 20 million tons in the USSR is greater than the year-to-year decline in foreign use. For the USSR, much of the expected decline in coarse grain use is because of their inability to offset their smaller crop and procurements with higher imports.

World trade in coarse grains in 1991/92 is projected at 83.2 million tons, compared with 84.8 million in 1990/91. Higher output in Europe and parts of Latin America and North Africa are expected to reduce imports. At the same time, there will be large exportable supplies of barley in Europe and Canada, larger corn exports in Europe, continued large exportable supplies of corn in China, and strong competition from wheat for feeding in some markets.

The 1991/92 U.S. Feed Grain Situation

The 1991 national average feed grain yield of 2.38 tons per acre is forecast 7 percent below the record yield set a year ago, largely because dry conditions in the eastern Corn Belt reduced corn yields. Thus, even with a larger harvest area, U.S. feed grain production declined 5 percent to 218.5 million tons. Supplies of feed grains, however, are down less than 4 percent, because carryin stocks were up over 2 million from last year.

Domestic feed demand in the U.S. accounts for a major proportion of feed grain use. However, feed demand can be met through sources other than the traditional feed grains. During the 1990/91 wheat year (June-May), large quantities of wheat were fed due to relatively low wheat prices. Wheat prices were attractive relative to feed grains again this past summer, and large supplies of low quality soft red winter wheat were available. With wheat prices forecast to be well above year-earlier levels, at least through the remainder of the wheat year, less wheat feeding is expected. In contrast, a record hay crop was harvested last summer, and large supplies of hay at lower prices are available to livestock producers.

The performance of the major livestock sectors--beef, dairy, hog, and poultry--provide the underlying forces driving feed demand. The outlook for these sectors point to higher overall demand, compared with last year. Production of total red meats and poultry in calendar 1991 increased over 3 percent and growth of nearly 4 percent is forecast for 1992. Growth will be strongest in the pork sector (nearly 8 percent) as herd expansion is well underway. Poultry meat production is forecast to increase between 3- and 4-percent in 1992, while growth of only around 1 percent is expected for beef. Declining dairy cow numbers are expected to moderate feed demand in the dairy

sector. When all factors are considered, feed and residual disappearance of feed grains is expected to increase modestly in 1991/92 to 180 million tons, compared with 178 million last year.

Corn used for food, seed and industrial products (FSI) has been constantly growing over time. However, as a percentage of total use, the FSI sector has remained about the same. In 1990/91, FSI use accounted for 17 percent of total use, up from 16 percent in 1989/90. For the marketing year, FSI use likely rose 3 percent from a year earlier due to increased shipments of corn sweeteners and starch.

For 1991/92, corn FSI use of 1,350 million bushels is again expected to represent 17 percent of total use, but only a 2-percent annual growth rate. Use by the industrial complex will be aided by a recovery in the general economy. Some news reports suggested blenders were using alcohol and setting up alcohol programs, possibly getting a jump on the Clean Air Act Amendments of 1990 and lining up suppliers early. Both factors will increase corn use by the wet and dry milling industries.

The outlook for global imports of coarse grains and increased competition during 1991/92 is expected to reduce U.S. coarse grain exports. Feed grain exports are forecast down 9 percent to 47 million tons, with corn exports declining more than 150 million bushels to 1,575 million bushels. Weak imports by major customers, especially the USSR, Mexico, and South Korea, a drop in imports needs in both the EC and Eastern Europe and higher exports by competitors account for most of the forecast decline.

In total, disappearance of feed grains in 1991/92 is forecast to decline marginally as higher domestic use is more than offset by reduced exports. Total disappearance of 227 million tons matches the second lowest disappearance in the last 5 years. However, even with the reduced disappearance, use will exceed production and forecast 1991/92 feed grain stocks of 40 million tons will be the lowest since 1983/84.

Forecast ending stocks of corn for 1991/92 of 1,284 million bushels are also down from a year ago and represent a stocks-to-use ratio of just 16.6 percent. As a result, corn prices received by farmers are expected to increase to reflect somewhat tighter supplies and lower stocks. For the first 2 months of the marketing year, farm prices averaged just over \$2.30 per bushel, but declined in November under the weight of early completion of harvest and uncertainty about potential sales to the USSR. For the 1991/92 year, the farm price of corn is forecast to average in a range between \$2.15 and 2.55 per bushel.

While supplies of U.S. feed grains are fairly certain, there are several factors that contribute to uncertainty in the price forecast. Southern Hemisphere crops are just now getting planted and their output will depend largely on weather in the coming months. Weather developments which reduce yields would tighten world supplies and cause higher prices. Further, weather shocks next spring and summer in Northern Hemisphere countries, particularly in the United States, would also affect 1991/92 prices.

On the demand side, Soviet imports are the greatest source of uncertainty. The level of USSR corn imports will likely, in turn, largely depend on U.S.

financial assistance. Weaker-than-anticipated import demand by other countries in general provides downside risk to our price forecast.

Prospects for Feed Grains, 1992/93

Now I would like to highlight some of the factors and trends which are noteworthy for the 1992/93 crop year. First, suffice to say that all supply and demand numbers are variable. Most of the world's coarse grains will not be planted until next spring or later. Currently, negotiations are occurring on agricultural and trade policy in several forums, such as the GATT and the North American Free Trade Agreement. While the outcome of these discussions are likely to have the largest impact on U.S. agriculture later in the 1990's, a successful conclusion in the next few months could affect 1992/93 supply and demand.

Potential U.S. Feed Grain Supplies, 1992/93

On November 15, Secretary Madigan reaffirmed the Administration's decision to reduce the 1992/93 set-aside requirements for corn, sorghum, and barley from 7.5 percent to 5 percent. By law, the ARP (acreage reduction program) for oats remains at zero. Target prices remain frozen at their 1990/91 levels for the duration of the current legislation. Target prices during 1992/93 are \$2.75 per bushel for corn, \$4.66 per hundred weight for sorghum, \$2.36 per bushel for barley, and \$1.45 per bushel for oats. The loan rates are \$1.72 per bushel for corn, \$2.91 per hundred weight for sorghum, \$1.40 per bushel for barley, and \$0.88 per bushel for oats. The loan rates increased due to higher average market prices during the preceding 5 years (with the high and low years discarded) relative to a year ago.

The 1990 legislation introduced a new dimension of planting flexibility which will be a major factor in determining the size of feed grain plantings in 1992. This flexibility allows farmers to plant other program crops and allowed non-program crops on 15 to 25 percent of their base acres without suffering a reduction in the size of their base acreage. However, the flex acres are not eligible for deficiency payments. Thus, relative market returns now play a more important role in planting decisions.

While much can happen between now and planting time next spring, current expectations of participation in feed grain and other set-aside programs point to an increase in corn plantings of 1 to 3 million acres from 1991/92 to approximately 77 to 79 million acres.

A simple trend yield estimate based upon the 1960 to 1991 corn yield data would place corn yields in 1992 between 119 and 120 bushels per acre. Thus, 1992/93 production would range between 8.2 and 8.5 billion bushels. Assuming the current forecast for 1991/92 ending stocks of corn, the larger 1992/93 corn production would result in supplies of 9.5 to 9.8 billion bushels. If total use of corn in 1992/93 is assumed to equal the current level forecast for 1991/92, the 1992/93 ending stocks would be up 500 to 800 million bushels. This, in turn, would lead to lower prices and increased demand, both by the domestic market and by foreign importers.

Potential U.S. Corn Export Markets

While lower U.S. corn prices would mean U.S. exports would be more competitive in world markets, both against competitor corn exports and wheat for feeding, weather and financial assistance will likely be the major factors determining the world import demand for U.S. corn.

Domestic Feed Grain Sectors

The food, seed, and industrial sector may experience stronger growth in 1992/93 due to potential improvement in the general economy and policies related to the environment.

Three factors affecting the environment include the Clean Air Act of 1990, the Budget Reconciliation Legislation, and the National Energy Strategy. Each of these policy programs will likely increase the use of alternative fuels, of which ethanol is one.

In livestock sectors, higher total meat output is expected to continue, although at a somewhat slower pace. Larger calf crops in 1991 and 1992 will find their way into feed lots and increase demand for feed. The trend toward higher per capita consumption of poultry is also expected to continue. The only weak growth area may be in the hog sector, where the liquidation phase of the hog cycle could actually reduce feed requirements. However, pig numbers may be larger at the beginning of the 1992/93 period before lower farrowings cause numbers to decline.

Risks to the Scenario

The greatest risk to the analytical exercise that we have engaged in here is that you leave thinking that the USDA is forecasting a 500-to-800-million bushel increase in corn stocks during 1992/93. This is not the case. But I hope you leave with a sense of where the market is likely to move if we get between 77 and 79 million acres of corn planted next year and that no dramatic shocks in weather or demand factors develop.

Let me further develop a "what if" scenario that will help you anticipate the markets if a weather shock in the United States were to occur next spring or summer. Let's assume for simplicity's sake that average U.S. corn yields are the same next year as the almost 109 bushel per acre currently forecast for 1991. This would certainly not be considered a major drought and would be only 2 bushels per acre below the 6 year moving average that at least one trade analyst prefers to trend yields. Corn production would then fall between 7.5 and 7.8 billion bushels, leading to supplies of 8.8 to 9.1 billion. The same total use in 1992/93 as forecast for 1991/92 would result in 1992/93 ending stocks of corn ranging from a drop of 200 million bushels to a gain of 100 million.

Longer Term Trends and Issues

During the next 3 to 5 years, many stochastic events which are unforeseeable could occur. Some supply and demand factor should watch are potential changes in trade relationships, e.g. GATT, NAFTA (North American Free Trade

Agreement), environmental policies, and transforming economies (Eastern Europe and USSR), to name just a few.

Environmental issues will directly affect the supply and demand side of the market. Water quality issues and food safety issues are likely to affect directly the way agriculture will use pesticides and other production enhancing chemicals. More indirect impacts may come from air quality standards through increased uses of alternative fuels. The forces of many of these trends and issues are already well underway.

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THE WORLD GRAIN OUTLOOK

Frank Gomme
Agricultural Marketing Specialist
Foreign Agriculture Service

A number of significant events have helped shape the world grain economy in recent years.

A listing of just a few of these events would include:

- The 1985 U.S. farm bill which significantly reduced basic loan rates in the United States and affected grain values worldwide. The 1991 U.S. farm bill basically continued many of these features.
- The introduction of the Export Enhancement Program (EEP), which was designed to counter EEC grain subsidies has allowed U.S. exporters to be competitive in targeted markets.
- The growing dependence of world grain trade on credit.
- Continued softness in the growth in grain consumption with more demand being met with domestic production.
- A downward trend in world grain area, principally in the USSR and the major grain exporters.
- The EC's emergence as a net exporter of coarse grains with a further expansion of their net exporter position in wheat.

For the purpose of this discussion, grains include both wheat and coarse grains. Analysis of the world grain market this year is particularly challenging. In the past, a grains analyst had to be part agronomist, meteorologist, crop forecaster, demand estimator and price speculator. Now add financial analyst to near the top of this list.

Grain production, consumption and trade patterns are undergoing major changes in many countries, whether the result of specific policy reforms or as a by-product of other changes. Certain events, such as those now occurring in the Soviet Union are having an immediate impact on the world market while others will have more effect over the next few years.

GRAIN TRADE AND CREDIT

Buying on credit is an everyday occurrence for most of us. Consumer credit has become one of the main props of our economy. But what most of the general public may not know is that credit for international grain purchases, at least at the current level, is also very important. The booming grain export period of the 1970's was fueled mainly by much larger East Bloc imports, mainly for cash, but loans and credit were becoming increasingly important factors. Exporter backed credit continued to help many countries finance their grain import needs during the 1980's. In the mid to late 1980's, there was a retreat from the use of credit. India, Brazil, Iran, Iraq, Poland, and other large importers limited use of credit. In the summer of 1990, however, credit assistance for grain purchases took on a whole new importance when the world's largest single grain importer, the USSR, insisted that it needed credit to make grain purchases. Subsequent months saw numerous countries, both large and small grain exporters, extend credit to the USSR for both wheat and coarse grain purchases. Various sources suggest that two thirds or more of the world's wheat trade in 1989/90 may have been accompanied by some form of credit or food aid financing. The percentage likely increased in 1990/91 as countries extended large lines of credit to the USSR. This percentage could expand further in 1991/92, if for no other reason than the USSR has significantly higher import needs and urgently needs financial assistance. However, there appears to be a growing concern about the level of indebtedness for the USSR and who will assume the responsibility for payment. As a result, some countries have delayed extending additional credit until they are satisfied as to who within the USSR's evolving political and economic system will be responsible for covering outstanding debts and taking on new debt.

A LOOK AHEAD: 1992/1993

It is far too early to accurately project the 1992/93 world wheat and coarse grain crops. However, some general observations can be made about prospective supplies and demand and levels of trade which may be helpful in planning for the 1992/93 marketing season.

Worldwide grain stocks at the start of 1992/93 marketing years will be relatively low. Thus, prospects for the 1992 crop take on even greater importance as global grain consumers will be largely dependent on 1992 crop out-turns to meet consumption needs. Keep in mind that global stockpiles could quickly shrink to their lowest level since the mid-1970's should 1992 witness a significantly reduced world grain crop.

Although grain prices are still below levels at this time 2 years ago when ending stocks were the smallest since 1980/81, wheat prices have strengthened worldwide in recent months. This could send a positive signal to grain farmers to expand production. However, grain producers in several key producing countries, including China, the USSR and the EC are effectively insulated from world price movements. Producers in countries such as Canada, Argentina and Australia have, in the past, been responsive to strengthening prices. However, Canadian grain area is already quite large.

Already, the United States has announced reduced ARP levels for both wheat and feed grains for the 1992 crop. This along with improved grain prices internationally, should result in at least a modest increase in world grain area in 1992, the first significant upturn since 1989.

Let's turn to the production outlook for a moment. It would take outstanding yields in 1992/93 to duplicate conditions of the 1990/91 marketing year. In that year, world wheat and coarse grain production soared to a record 1.43 billion tons, exceeding utilization by more than 32 million tons and resulting in a significant increase in world stocks. However, 1990/91 was the only year recently that the world was able to add to grain stocks.

I would like to point out that there is already some early concern about conditions for the establishment of the 1992 winter wheat crop in parts of the USSR, China and in the U.S. Great Plains. However, a lot can happen to make or break the 1992 grain crop before combines move into the fields 4 to 6 months from now.

If the world should harvest a somewhat larger wheat crop in 1992/93, consumption should. Wheat is likely to continue to be priced attractively as a feed ingredient in many countries, plus food use of wheat should continue its historic up-trend. As usual, weather conditions will determine the size of the world wheat crop. However, given favorable weather, especially in the USSR, the 1992 wheat crop could exceed utilization and thus permit some rebuilding of world wheat stock in 1992/93.

A preliminary review of world wheat trade prospects for 1992/93 is heavily dependent on how much the USSR and China imports. Wheat import demand is expected to grow in the Middle East while demand for milling quality will continue strong in Asia. Imports of wheat for feeding, which expanded in recent years, will again depend on the level of wheat prices relative to coarse grains. The major uncertainty is what will happen to USSR imports. If wheat outturn in the USSR returns to a more normal level their 1992/93 import requirements would likely shrink. Export competition is likely to again be intense as wheat supplies in the world's major exporter could well be as large or larger than in 1991/92. Keep in mind that Canada's and the EC's stocks at the beginning of the 1992/93 year will be extremely large putting additional pressure on them to move wheat if they should harvest a large 1992 crop.

The preliminary outlook for coarse grains in 1992/93, would likely feature prospects for a larger crop, some increase in utilization from the 1991/92 level and the possibility of some increase in stocks.

The world coarse grain trade outlook for 1992/93 points to another year of relatively modest trade, but like wheat, the level of world trade will hinge largely on USSR imports. However, a larger USSR grain crop would likely lead to some decline in USSR imports. While coarse grain import demand in North Africa and Latin America will largely depend on 1992 production, any increase in coarse grain imports by South Korea will depend on the delivered price of corn relative to wheat for feeding. A larger U.S. coarse grain crop could intensify competition in the world's coarse grain market.

World trade for 1991/92, at over 104 million tons, is projected to exceed the year earlier level by 12 percent and be the third largest ever. The major reasons for the forecast sharp increase in trade is a 6-million-ton increase for the USSR and a 5-million-ton gain for China. U.S. exports are projected up over 2 million tons to 30.5 million. Forecast exports for Canada and the EC are expected to reach record levels in 1991/92 up over 6 million tons collectively from last year.

The large world wheat crop, although well short of the record 1990/91 harvest, is expected to translate into the second highest utilization level ever at nearly 560 million tons. While this is down more than 14 million tons down from last year's record 570 million it is still quite impressive given the forecast 15 million ton decline in USSR wheat use. A key feature of the relatively strong utilization estimate is the expected continued heavy use of wheat for livestock feeding both from internal supplies and from imports.

There are some key points that I would like to raise in wrapping up the discussions for the world wheat situation.

- Record EC wheat production, burdensome stock levels, and a willingness to aggressively subsidize wheat on to world markets will maintain pressure on world wheat prices, even with a tightening of world stocks.
- Canada is likely to continue to be extremely aggressive in the world wheat market given its large stocks and a record crop.
- Import demand for many countries will continue to be affected by their hard currency shortage and dependency on credit programs, with the Soviet Union receiving the most attention.

World coarse grain production during 1991/92 is currently projected at around 800 million tons, over 30 million tons below last year's crop. Major production declines are expected in the Soviet Union (down 28 million), the U.S. (down 12 million) and China (down 7 million). Production increases in Eastern Europe and the EC are partially offsetting.

The smaller world coarse grain crop is expected to result in a drawdown in global stocks of nearly 7 million tons in 1991/92. The bulk of the decline in stocks is expected in the United States and the USSR. World coarse grain stock levels as a percentage of total utilization will also decline.

World trade is projected to decline again this year and, at slightly over 83 million tons, would mark the second lowest trade total in the past 15 years. A relatively low level of prospective USSR imports is a key factor in the stagnant outlook for world coarse grain trade. Small declines are projected in world corn and sorghum trade, while barley is projected up slightly. In some countries, reduced imports reflects improved domestic crops, but in other cases it reflects the continued competition from the feeding of wheat. Most of the major competitors are expected to increase their coarse grain exports in 1991/92 while China's exports are forecast to be record large. Consequently, U.S. exports in 1991/92 are forecast down 9 percent from last year which was off 25 percent from 1989/90.

I would like to briefly review the 1991/92 world wheat and coarse grain situation this morning. A number of other speakers will also be addressing this topic so I will make this short.

1991/92: TIGHT SUPPLIES - STRENGTHENING PRICES

The major story in the world grain market this year has been the Soviet Union. USSR grain production in 1991/92 is estimated to be some 60 million tons below the year earlier harvest. Yet, despite large potential needs, imports by the USSR are projected to increase by only around 11 million tons from the 1990/91 level to 37 million tons. In recent months Soviet imports of grain and other agricultural products have become nearly totally dependent on importer credits, aid packages and barter. Decisions by creditors on new sales are being complicated by the erosion of internal government control and difficulties in assessing Soviet credit worthiness.

Some additional comment on the global grain stock situation is in order. Although stocks in relation to utilization are now nearly as low as they were in the turbulent times of the mid-1970's, there are many contrasts. The stock situation in the mid-1970's was commonly referred to as "dangerous," and there is always some risk of extraordinarily bad crop weather, but in the current situation there are a number of reasons why this situation is not nearly as precarious as in the mid-1970's. At that time, we had all-out production in all major producing countries, and yet no real surplus in on hand; today, by contrast, we still have 50-60 million acres of crop land out of production in the United States, and there is a major grain surplus in Western Europe, plus a not-insignificant surplus in Canada. Another contrast is that despite a continuing very serious problem of import restrictions around the world, grain markets are significantly more open and more responsive to changing price conditions; thus, if we should experience poor global crop weather next year, we can expect a quicker downward adjustment in usage, especially for feeding, and quicker action to temporarily cut inventories, divert land from other crops, etc.

World wheat production during 1991/92 is estimated at 547 million tons, down 46 million from last year's record harvest, but still the second largest crop ever. Major declines occurred in the Soviet Union (estimated down 30 million tons) and the United States (down 21 million). Two major competitors, Australia and Argentina are forecasting crops down 5 million and 1.5 million tons, respectively. The EC and Canadian wheat crops are both estimated to have been record large crops in 1991. Large crops in the EC and Canada, and prospects for a significant build-up in their wheat stocks has been a major reason for the intensely competitive world wheat market.

World wheat stocks are expected to decline by over 10 million tons this year following a 21-million-ton increase last year. The forecast drop in U.S. wheat stocks is almost as large as the drop in world stocks.

World total coarse grain consumption is expected to again be down during 1991/92 -- mainly reflecting the USSR situation.

A few key points to keep in mind on world coarse grains include:

- If there is another bumper world wheat harvest next year, several countries are likely to offer to sell wheat at highly competitive prices relative to coarse grains -- continuing to displace coarse grains in major markets like South Korea.
- Coarse grain import demand for the Soviet Union will continue to be impacted by their hard currency shortage and dependency on financial assistance.
- Improved corn harvests in Eastern Europe, after last year's drought-impacted crop and declining demand linked to the reduction of consumer subsidies, will sharply lower the regions coarse grain import needs, and likely even stimulate corn exports.
- Consecutive large corn harvests in China have greatly increased the countries exportable corn supplies. Corn exports for 1991/92 are forecast to approximate last year's record 6.6 MMT. Limited storage facilities and a need for hard currency will keep China aggressively exporting corn onto the world market.

SOME POINTS TO PONDER

As a wrap-up, I would like to review some developments in the grain world which may influence events in the year ahead. Some of these developments have been evolving for a number of years, others are more short term.

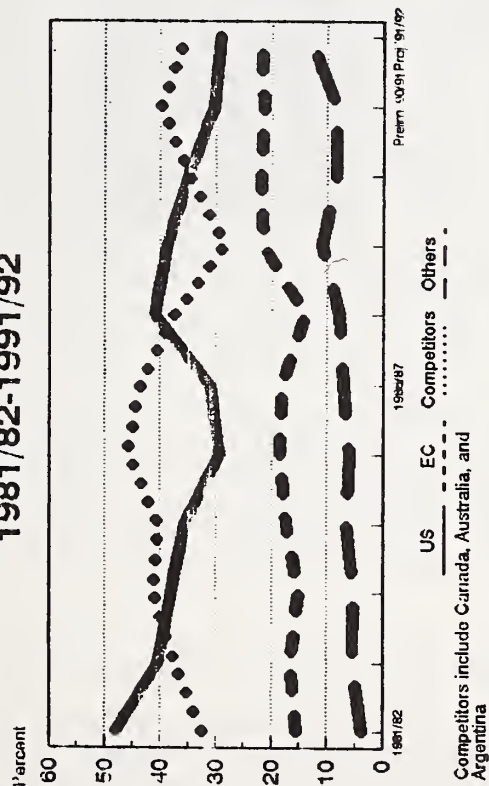
A look at global grain imports over a series of years shows a marked change in the trend. Global imports showed a sharp upward trend during the late 1960's and throughout the 1970's and early 1980's but appear to have registered a distinct leveling off in recent years. This appears to be due at least in part to an increasing prevalence of self-sufficiency policies which discourages imports and encourages local production. In some instances these policies are attributed to concerns about food security and its role in national security. For other countries, scarce foreign exchange because of slow economic growth and large debt repayment requirements, as well as concern about maintaining a viable rural sector, have also contributed to lower imports. In most cases, however, it's a continuing problem of countries - many of them very high cost producers with no comparative advantage in grain production and thinking that they can expand exports of their goods, but on the other hand, don't want to permit increased imports. This is a big problem. We hear about Japan rice - it's a celebrated case - but the problem is far wider. Japan's feedgrain imports are stagnant, while their imports of livestock products are rising sharply; the problem is that their domestic feeding industries are shackled by all kinds of regulations, including import restriction.

For the second time in the past decade, the role of the United States as grain stock holder has diminished. Collectively, U.S. grain stocks are still larger than those of any other country. But, in 1991/92, the U.S. is projected to draw stocks down while foreign stocks remain about the same. EC and Canada each are expected to have large stock levels at the end of their respective marketing years.

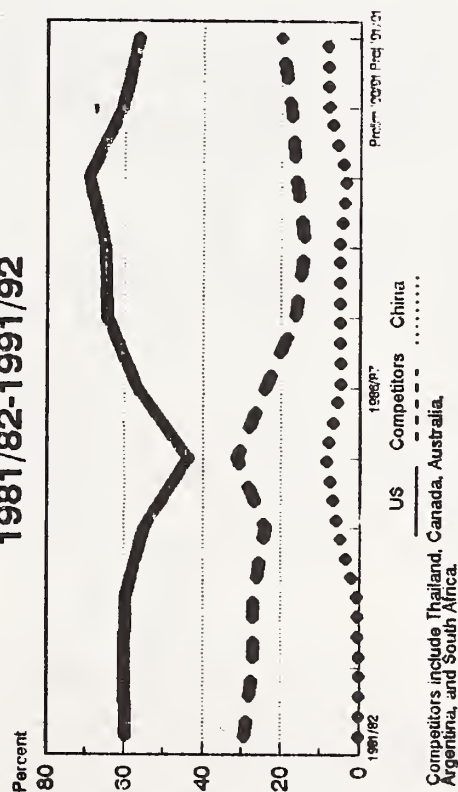
In order to put current global stocks for wheat and coarse grains in better perspective one must compare them with use. The stocks-to-use ratio (ending stocks divided by use), an often used indicator of the relative abundance or scarcity of supplies, is expected to total around 19 percent for 1991/92, the second lowest since 1975/76. The last time the stocks to use ratio was this low, in 1989/90, world grain prices showed significant strength. The major differences this year are that only modest quantities of U.S. grain stocks are tied up in various government programs, consequently free grain stocks are not as tight as in 1989/90 and extremely large supplies in the EC, Canada, and several smaller exporters have resulted in aggressive sales which have tended to dampen the upward movement in grain prices. Of course, the USSR's dependence on financial assistance is also a big change from these earlier years when world grain stocks were relatively low.

Trade in feed quality wheat is expected to continue heavy in 1991/92, accounting for an estimated 5 percent of total wheat trade. With several countries offering wheat at a discount to corn, trade in wheat for feeding could approach an all time high.

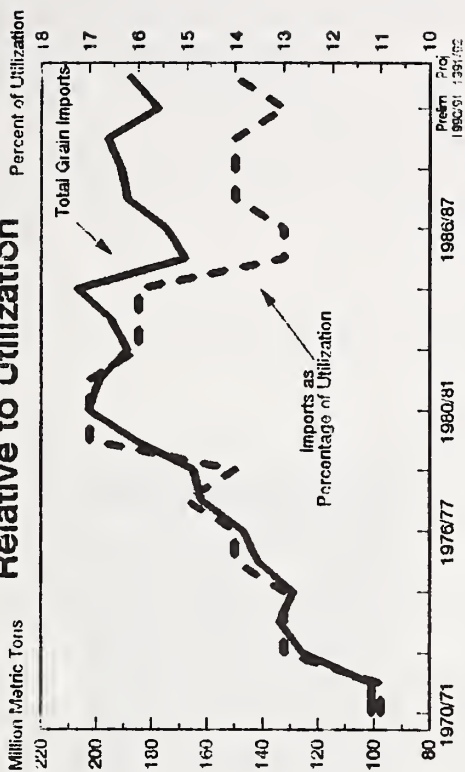
World Wheat Trade Market Shares 1981/82-1991/92



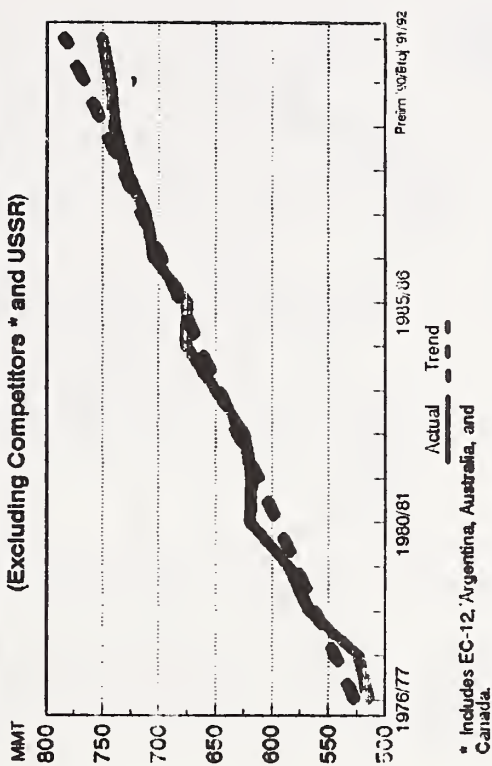
World Coarse Grains Trade Market Shares 1981/82-1991/92



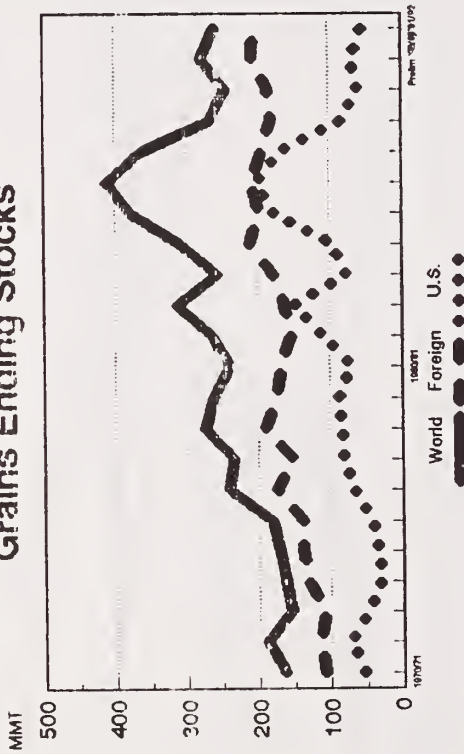
World Grain Imports Relative to Utilization



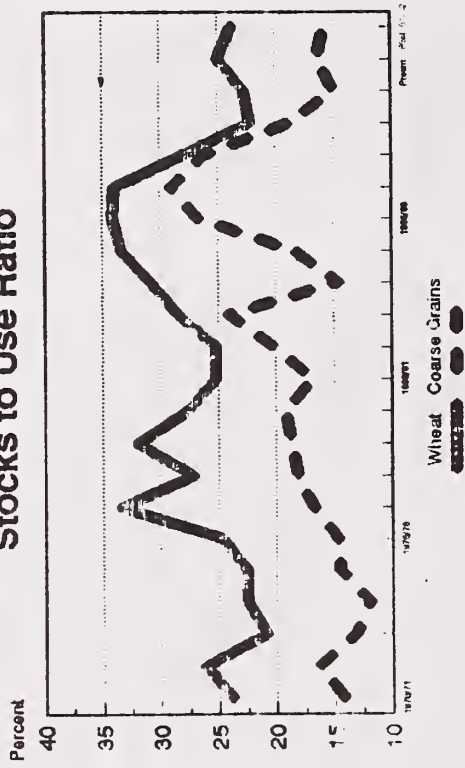
Foreign Wheat and Coarse Grains Consumption: (Excluding Competitors * and USSR)



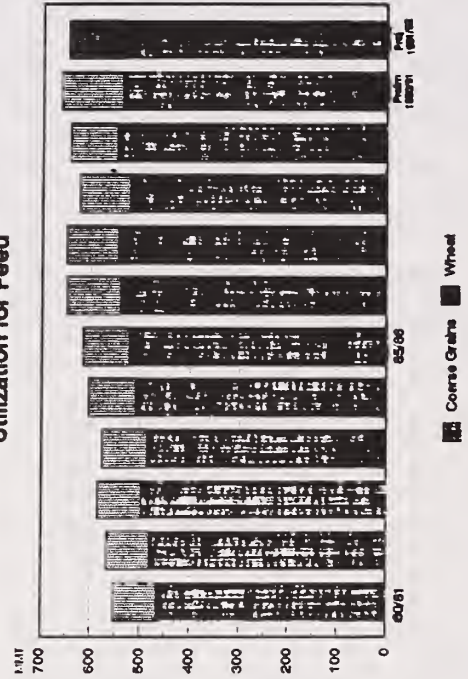
World, Foreign, and U.S. Wheat and Coarse Grains Ending Stocks



World Wheat and Coarse Grains: Stocks to Use Ratio



World Wheat and Coarse Grains: Utilization for Feed



ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
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Outlook '92

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REREGISTRATION'S IMPACT ON AGRICULTURE

Peter P. Caulkins
Deputy Director, Special Review and Reregistration Division
U.S. Environmental Protection Agency

- * I am pleased to be here today to talk with you about the impact of EPA's reregistration program on U.S. agriculture.
- * The accelerated pesticide reregistration program mandated by the 1988 amendments to the federal pesticide law, FIFRA, is having some noticeable impacts -- on EPA, on the pesticide industry, and on growers and others who use pesticides in earning their living.
- * The change that is affecting agricultural users the most is the decline in the number of pesticide products that are registered by EPA for use in the United States. There are only about half as many pesticide products registered today as there were three years ago, before the FIFRA '88 amendments went into effect.
- * However, the changes in pesticide regulation that are taking place now are not necessarily changes for the worse. In the long run, everyone in our society stands to benefit from the current "culling" process.
- * Although reregistration is leaving us with fewer pesticides, those that remain will likely be the safest and most effective ones. The program should, therefore, help restore public confidence in the safety of the food supply, and reduce the occurrence of individual state legislative initiatives on pesticides.

Impact of FIFRA '88 Reregistration on Registered Pesticides

- * The 1988 amendments to the Federal Insecticide, Fungicide, and Rodenticide Act, known as FIFRA '88, directed EPA to accelerate the reregistration of older pesticides -- those first registered before November 1984.

- FIFRA '88 set deadlines for pesticide registrants to provide updated studies on the human health and environmental effects of their products, and for EPA to review these studies and make reregistration decisions.
- It required registrants to pay one-time reregistration fees, and annual product maintenance fees.
- * Many registrants have responded to the increased costs and time constraints by voluntarily cancelling the registrations of pesticide products or uses that are no longer profitable.
- * We have seen a significant drop in the number of pesticides supported for reregistration.
 - Since late 1988, the number of registered pesticide products has decreased from approximately 45,000 to 20,000.
 - The number of pesticide active ingredients subject to reregistration has dropped by over 40 percent, from 1,153 to approximately 678.
 - About one third of all reregistration "cases" (or groups of related active ingredients) are no longer supported for reregistration. Out of 611 cases, 410 are still supported, and 201 are not.
- * While these numbers appear drastic, it is important to note that the vast majority of the cancellations to date have been for "paper registrations" -- obsolete registrations of products that actually have not been produced for years.
 - We estimate that 77 percent of the nearly 20,000 products cancelled in 1989 were paper registrations, and that their cancellation had no negative impacts.
 - Similarly, 76 percent of the products cancelled in 1990, and 74 percent of the products being cancelled in 1991, are paper registrations only.
- * It's also important to note that the rate of cancellations has declined a great deal, and is stabilizing.
 - Although nearly 20,000 products were cancelled in 1989, about 4,500 were cancelled in 1990, and less than 1,600 are being cancelled in 1991.
- * The other side of the coin is that 20-25 percent of the products cancelled during the past three years were not paper registrations -- that is, they were still being produced, to some extent.

- * However, only a handful of the cancelled products with recent production were the last to contain a particular active ingredient.
 - ° EPA recognizes that the impact of cancelling the last product containing an active ingredient could be severe. Therefore, we have temporarily deferred cancellation of such registrations for 90 days, and announced them in an FR notice and through extensive notification of outside groups. During this 90-day period, people concerned about the impending loss of an active ingredient mentioned are encouraged to contact the appropriate registrant.

Minor Uses and Reregistration

- * The minor use problem is a long-standing one. It's not always economically attractive for a pesticide producer to register or maintain the registration of a low volume or low revenue pesticide use, especially when the regulatory costs are high. However, the use in question may be essential to certain growers or other pesticide users.
- * FIFRA '88 probably has made the minor use problem worse by mandating the accelerated reregistration program. Necessary studies must be submitted and required fees must be paid by registrants within specific timeframes, or their product registrations ultimately are cancelled.
- * A substantial number of minor uses are being deleted from product labels, or entire products are being voluntarily cancelled, by registrants who do not wish to -- or cannot afford to -- develop the studies required to support their products or uses through reregistration. (Even though certain data requirements and fees can be and are being waived, often that is not enough.)
- * EPA is concerned about minor uses, especially in view of accelerated reregistration. We need a certain amount of information about any pesticide in order to make a reasonable decision concerning its reregistration. However, we understand that we must be flexible in imposing our requirements, and innovative in helping to find ways to deal with the minor use reregistration problem.

EPA Programs to Assist Minor Uses

* Low Volume/Minor Use Data Waivers

- ° As a matter of policy, EPA is being flexible in imposing data requirements for reregistration of low volume pesticides and low volume uses of major pesticides.
- ° We have given registrants the opportunity to propose data waivers for these low volume or minor uses.
- ° So far, for the List B, C and D pesticides, we have received over 11,000 data waiver requests and have granted 38 percent of these, including many low volume/minor use waivers.

* Minor Use Maintenance Fee Waivers

- ° Under the provisions of the 1990 Farm Bill, FIFRA has been amended to authorize the EPA Administrator to reduce or waive the annual maintenance fee for agricultural pesticide products with minor uses. The maintenance fee is to be waived or reduced when it would be likely to cause a significant impact on the availability of a pesticide for a minor use.
- ° EPA is working with USDA to develop criteria and procedures. We plan to start implementing this new authority in 1992.

* Public Notice re: Voluntary Cancellations

- ° During the reregistration process, registrants may elect not to support, or to voluntarily cancel, some of their pesticide registrations. Many of these voluntary cancellations involve minor uses.
- ° EPA publishes notices of these impending voluntary cancellation actions in the Federal Register, and allows 90 days for the public to respond. Meanwhile, we conduct extensive notification activities working with USDA and the IR-4 Program. We explain how affected people can initiate action to prevent pesticides of interest from being cancelled.

* Third Party Workshop

- ° EPA and the National Agricultural Chemicals Association (NACA) sponsored a workshop this past summer, to explore possibilities for third party registration of minor uses. (A "third party" is anyone other than the registrant or EPA.)
- ° A third party registration can be used to retain a minor use by shifting liability from the registrant to the user or grower group. That is, a grower group can assume responsibility for crop losses through a contractual arrangement with the registrant.
- ° Discussion at the workshop focused on different options for addressing the product liability concerns of the registrant.

* Evaluation of Crop Grouping Scheme

- ° EPA created a crop grouping system years ago, to assist minor uses. Under this scheme, tolerances may be established for a group of crops, based on residue data developed only for certain representative crops in the group.
- ° Although crop groupings can be a useful tool, they have not been widely used. Only about 10 percent of all tolerance petitions submitted to EPA involve crop grouping proposals.
- ° We are evaluating our crop grouping scheme, with input from IR-4, NACA and other groups. By fixing problems they have encountered in trying to use this scheme, we hope to make crop grouping a more useful tool.

IR-4 and Reregistration

- * The IR-4 Program, a cooperative effort supported by USDA, EPA, Rutgers University and several others, serves as the national coordination point for identifying minor use needs and developing data to support minor uses.
- * IR-4 has about 1,200 requests for new minor uses in its system or queue. They anticipate that as many as 1,000 additional minor use assistance requests could come in during the FIFRA '88 reregistration program. So, a total of 2,200 minor uses may require IR-4's attention during reregistration.

- * Prioritizing these requests is an issue, at present. So far, prioritizing has been done informally, at a big annual meeting sponsored by EPA and attended by State representatives and local experts, as well as IR-4 staff. Now a move is afoot to formalize the prioritization process.
- * Funding also is a problem. IR-4 now estimates that they will need \$14 million a year during 1992-1997, to keep up with the expanded workload created by FIFRA '88 reregistration. However, they received only about \$3 million in FY-91, and are not likely to receive much more than that amount in FY-92. IR-4 has a big job to do, and EPA supported the Administration's Farm Bill proposal for increased funding of IR-4. EPA provides about \$500,000 a year in support of IR-4.
- * EPA waives all tolerance fees for petitions submitted by IR-4.
- * We also are working with IR-4 to develop data submission schedules for reregistration that will more fully utilize IR-4 resources. EPA will allow IR-4 to provide residue studies based on the last due date for the major studies that are to be submitted by the manufacturer.
- * We also are sending IR-4 Data Call-In notices of interest, as well as advance notices of voluntary cancellations and use deletions, prior to Federal Register publication.

Joint Government/Industry Programs

- * During the past year, a Minor Use Workgroup consisting of representatives from EPA, USDA, the IR-4 Program, NACA, and a number of grower groups has been meeting on a regular basis. Their mission is to develop ways to minimize the impact of reregistration on the minor use community.
- * One of the results of this Workgroup has been the development of two Notification Networks for growers and grower groups.
 - o One is sponsored by USDA. When USDA receives word from EPA or the pesticide industry that a registrant has decided not to support a pesticide or use through the reregistration process, they pass this information along to grower groups, giving the growers time to act if they will be adversely affected by a voluntary cancellation.

- Similarly, NACA has developed a Notification Network, to communicate voluntary cancellation decisions made by its member companies.
- * EPA, USDA, IR-4 and NACA each have designated telephone lines to answer questions about pesticides and reregistration.
- EPA's toll-free number is 1-800-552-8879.
 - USDA's toll-free number is 1-800-262-0216.
 - IR-4's number is 908-932-9575.
 - NACA's number is 202-296-1585.
- * EPA, USDA, IR-4 and NACA jointly produced and have widely distributed an information bulletin or fact sheet, Minor Use and Pesticide Reregistration--How Growers Can Participate. We advise growers to do the following:
- Develop a list of pest control needs.
 - Join or form a grower group to share information.
 - Get information about the status of pesticides that are vital to the production of their crops.
 - If an important use is in jeopardy, contact the registrant.
 - Be prepared to act with other growers to fund needed studies, petition for a crop group or regional tolerance, or obtain a third party registration.
 - Be prepared to seek alternatives if it's too late, too costly and/or too difficult to help support a needed pesticide use.

Private Initiatives: The Malathion Coalition

- * A coalition of about 40 registrants has been organized to support some of the approximately 90 uses of malathion voluntarily cancelled by the basic manufacturers.
- * The coalition is actively deciding which uses they will commit to support.
- * For more information, contact Warren Stickle, President of the Consumer Products and Distributors Association (CPDA).

Conclusion

- * In summary, with accelerated reregistration, the "day of reckoning" has arrived for older pesticides. Many won't make it through the reregistration process. But those that do and are reregistered will be ones that we can all feel better about, because we'll know that they meet current standards and can be used without posing undue risks to people or the environment.
- * The loss of many of the old, conventional chemical pesticides need not have a devastating effect on the production of either major or specialty crops. The attention of government, industry and users alike is focused on the problem of minor uses and reregistration, and some important initiatives are underway.
 - EPA is issuing data waivers for minor uses, and will soon be issuing maintenance fee waivers, as well.
 - We are providing public notice of impending voluntary cancellations.
 - EPA advocates third party registrations, crop grouping, and regional tolerances for minor uses.
 - We actively support and work closely with the IR-4 Program, waiving their tolerance petition fees and maintaining flexibility in scheduling due dates for submission of their residue studies.
 - EPA is participating in joint government/industry efforts such as the User Notification Network sponsored by USDA.
 - We cooperate with private initiatives like the Malathion Coalition.
- * These things help, but they aren't enough.
- * In short, there are no easy answers to the minor use problem. The impacts of accelerated reregistration on minor use pesticides won't just go away and leave us alone.

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United States Department of Agriculture

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THE PESTICIDE RE-REGISTRATION DILEMMA AND ITS IMPACT

Art Losey
Assistant Director
Washington State Department of Agriculture

STATE PESTICIDE ISSUES

Minor Use

Minor use pesticides are those that produce relatively little revenue for their manufacturers (or "registrants"), considering the cost of maintaining these registrations. However, minor use pesticides are of major significance in agricultural production, to growers as well as consumers. Without these small-scale but ornamentals that we enjoy in the United States, worth billions of dollars, could not be grown successfully.

Minor use pesticide registrations include:

- * many, if not most, pesticide uses on fruit and vegetable crops;
- * uses on commercially grown flowers, ornamentals, trees and turf grass;
- * infrequent or very limited acreage use on major crops, such as wheat, soybeans or corn, where the pest problem being treated is not widespread;
- * non-agriculture use, such as mosquito and rodent control, industrial pest control uses, disinfectants, etc.

Many of these crops are grown on less than 10,000 acres nationwide, and only 500 acres of total production for one crop is not uncommon. Therefore, these are low-volume, low-profit markets for pesticides. This is the crux of the problem.

Minor use pesticides are endangered for economic, not safety reasons. Agrichemical companies cannot afford to develop or keep them on the market.

In 1988, Congress mandated a rigid timetable for a safety review of all pesticides registered before 1984. The goal is to ensure that older products conform to modern standards and pose no unreasonable risks to environment.

Faced with the enormous cost of reregistration, chemical companies must decide which products and uses to retain and which to drop. In terms of time, technical support, and dollars, there are costs associated with the data and fee requirements of reregistration for each use listed on a pesticide product label. A full array of toxicology, metabolism, residue, and environmental studies runs into millions of dollars. Residue data alone for a single crop ranges from \$15,000 to 135,000. On top of these costs, EPA recently imposed higher annual "maintenance fees" on each pesticide use. As a result of the reregistration effort about 20,000 registrations, both active and inactive, have been dropped.

Not only is the availability of currently registered minor uses threatened, the prospects for new product replacements and non-chemical alternatives are scant, if any. The costs of research, development, and registration exceed the potential dollar value of the market.

Congress has recognized the special needs of minor crops and permitted EPA flexibility to respond. In 1978, EPA was directed to make minor use data requirements commensurate with magnitude of use and degree of exposure. Consideration is to be given to economic factors and the impact of data requirements on the incentives to support a minor use.

As a result, EPA's minor use policy includes a commitment to "give special attention to minor uses in all aspects" of their activities. A sincere attempt has been made by EPA to implement this policy through specific regulations to simplify and expedite minor use registrations.

Unfortunately, utilization of these policies has been severely limited by the absence of clear guidelines of precisely what constitutes a "minor crop." By some interpretations, minor crops are restricted to a few edible crops of low-dietary intake, while others believe the intent was to include all fruits, vegetables, nuts, herbs, spices, and commercially grown ornamentals, trees and turf.

Growers and food processors have made great efforts to minimize the use of chemicals through integrated pest management (IPM) -- an approach that relies on the use of multiple tactics and attentive management. IPM programs involve many minor uses and minor crops, and these programs depend on pesticide uses that may

be cancelled. If this occurs, it may take some time to develop new IPM programs.

A limited choice of pesticides available to respond to a specific problem can actually lead to more pesticide use and decreased effectiveness of the alternatives. With fewer products available, pest resistance is likely to increase. This may require additional applications of the pesticides that remain and place greater stress on non-chemical controls. Lack of approved products will encourage misuse or illegal use of pesticides that are registered for other crops.

This will have an impact in the State regulatory agencies that are responsible for enforcement of the federal and state pesticide laws.

There is no simple, easy solution. It is difficult to ease registration requirements without appearing to exempt minor use pesticides from tests and regulations that are important to restore public confidence in food safety.

Storage and Disposal Problems

A spin off of reregistration and special review has been the voluntary cancellation and or regulated cancellation of pesticides. The recent action on Ethyl Parathion has resulted in a situation where a number of growers and dealers are left with a substantial amount of parathion in farm or dealer storage. We are receiving numerous phone calls from these people stating that the product cannot be used up by the December 31, 1991 deadline; that the dealer will not take the product back from the grower; that the registrant will not take the product back from the dealer etc; all these people are asking what should they do with the product. The end result is that the states are left with a storage and disposal problem of a hazardous material. EPA may have created more of a problem than they solved with this cancellation.

It is important that a regulatory agency considered all the effects, both positive and negative, of a decision before it is finalized. As EPA works its way through the reregistration program it is important that they be given the tools and flexibility to make and implement good decisions so there will be minimal impact on proven IPM programs, crop production and the public.

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THE PESTICIDE REREGISTRATION DILEMMA AND ITS IMPACT

Jay J. Vroom

President, National Agricultural Chemicals Association

Thank you for inviting me to participate in USDA's 68th Annual Outlook Conference. When Rusty Jesser told me the topic of this panel discussion, the pesticide reregistration dilemma, it immediately reminded me of the following famous quote: "We are continually faced by great opportunities brilliantly disguised as insoluble problems."

For that's exactly what the entire pesticide reregistration process is: a great opportunity. FIFRA 1988 deadlines are unforgiving, resources are finite, and the pressures tremendous; **however**, there couldn't be a better group of people assembled to tackle and solve the problem! The motivation and momentum is present to transform this seemingly insoluble problem into a great opportunity.

Industry's Dilemma

From industry's perspective, the dilemma is not whether to comply; we are completely committed to successful reregistration. Rather, the dilemma for pesticide manufacturers, or registrants, is whether or not to defend the reregistration of an active ingredient. And, for those active ingredients the registrant does decide to defend fully, the dilemma is what uses to defend.

What do I mean by defend? I mean re-register. The 1988 amendments to FIFRA mandated the reregistration of some 600 active ingredients first registered for use in the USA prior to November 1984. The data base — toxicology, environmental fate, ecological effects, residue chemistry, etc — for each active ingredient must be updated to meet current scientific standards by the 1997 deadline. EPA estimates that this will cost industry in excess of \$3 billion — a very conservative estimate according to industry experts considering that typical reregistration costs for a single active ingredient are in the range of \$5 — \$10 million.

Details of Industry's Dilemma

Well, exactly what forces are at work? The time frame (9 years) combined with the number of active ingredients (approximately 600) creates a tremendous demand on personnel, laboratory space, analytical capacity, field facilities and economic resources. And if this isn't bad enough, industry and government are competing for the same pool of scientists to accomplish these tasks. Moreover, there is a massive amount of money spent on defense of products in an already extremely competitive marketplace.

For example, in 1990 NACA member companies spent about \$800 million on research and development in the United States. \$250 million was on defense of old products! The remaining \$550 million was spent on discovery and development of new products.

Consequently, it is easy to see that the decision to defend or not to defend a product is based primarily on economic factors. It all boils down to the issue of competing resources. Registrants need to decide whether to use their resources defending old products or discovering new and improved products which are the lifeblood of the industry. Given the difficulty of the task, there will be casualties. The statutory requirements and deadlines of FIFRA '88 are very unforgiving and tight. Someone always ends up unhappy because industry can't do both. How can we maintain a product and produce a "better" one?

Thankfully, the process of reregistration has become more focussed in recent months. This past October NACA and EPA reached agreement as to the definition of reregistration; consequently, it is no longer a "moving target." It was decided that the requirements that were in place at the time of the passage of FIFRA '88 would be used to judge eligibility for reregistration. Before this agreement was reached, there was massive confusion because reregistration was an open-ended process. Now, the set of studies required to accomplish reregistration are fixed. The process can continue on a straight and even course.

With the definition of reregistration clarified and agreed upon, we can now focus our efforts on other important issues. For example, how rapidly can EPA assimilate this new information? EPA has assured everyone that the reregistration process will not interfere with progress on new product registrations. After all, the influx of new products is just as important as the reregistration of old ones.

In addition, NACA member companies operate a business. Since they have finite limits as to people, facilities and capital, they must make balanced business decisions. This means dropping some products. These will be the less profitable products and crop uses, seldom because of the risk or hazard they may pose, and not necessarily

due to unwillingness of the manufacturer to support them. Companies simply must prioritize their finite resources. Deciding which ones have to be cut has resulted in a major problem: the so-called "minor use" issue.

Minor Use Issue

Two principal points are involved in the minor use issue. One is timely communications and the other is time. First of all, we need to make sure we are communicating effectively and efficiently with the impacted parties, the growers. Secondly, impacted parties need to have enough time to "save" the product they need. Currently, they only have 60 – 90 days; in some cases, this may simply not be enough time.

In addition, two sensitive communication dilemmas also exist. First, when should a registrant publicly state — to friend and competitor alike — they are going to drop a product? This is crucial because of the announcement's effect on the marketplace. Secondly, registrants have occasionally changed their minds. In some rare instances, manufacturers have told the user community that they are going to defend a particular product. However, after reviewing data, conducting some tests, and further interaction with EPA, the registrant has decided not to reregister a product. Naturally, this upsets growers.

The Impact of the Minor Use Crisis on Industry

The effect of these reregistration casualties on minor crop pesticide registrations is certainly being felt in the U.S., and repercussions are spreading beyond our borders. Cancellation of a product or even a specific use will most probably lead to revocation of applicable food crop residue tolerances, affecting production of those crops in foreign countries for export to the U.S. Numerous groups within agriculture and the food industry are raising the hue and cry about loss of the "minor uses". This process of public involvement appears a bit chaotic at the moment. It is certainly painful for many farmers who have lost or are in danger of losing vital crop protection chemicals. Nevertheless, we hope the result will be a healthy concern for and involvement in continued availability of crop protection products by all within the agricultural community.

The Impact on Industry: What NACA is Doing

NACA is cooperating with EPA and USDA to inform minor crop producers of uses that will be dropped and products that will be canceled. This should allow affected growers additional time to become involved in saving the products they need or seek appropriate alternatives to avoid disruption of crop production. In March of this year NACA established a fax network to more than 300 leaders in agricultural organizations nationwide (and some overseas), to inform the nation of impending changes in pesticide registrations as quickly as our member companies advise us. In other words, when a registrant advises EPA of their intent to drop a product in connection

with reregistration, this information gets communicated to agricultural leaders. These leaders in turn pass the information on to their constituents. While this effort — and USDA's mailing system to more than 2,000 impacted parties — in and of themselves don't solve the individual minor use problems, they do help to inform and bring together those who can.

Conclusion

If current trend continues and there is no legislative or administrative relief with regards to deadlines and data requirements, the minor use issue will be exacerbated. We will continue to be frustrated. However, we believe legislative remedy will move in Congress in 1992.

The unofficial White House Minor Use Report, released earlier this year, clearly outlines a series of solutions to these problems:

1. **EPA** must revise definition of minor use and be more flexible with data requirements.
2. **USDA** must continue acting on behalf of minor crop producers by attaching more importance to the minor crops industry and by allocating more resources for collection of production and economic data.
3. **NACA** member companies must continue giving early warning of intention for voluntary cancellation and continue cooperating with third party registrations.
4. **Congress** must maintain close oversight and introduce further legislative steps where necessary.
5. **Growers** need to form a coalition, be "unyielding" in efforts to gain attention of policy makers, and must be willing to make substantial commitments to keep products on the market.

Many of these solutions are already happening, and we are making a lot of progress. We have not let our frustration impede us from seeking successful and practical answers. Due to the past efforts of Jack Parnell and, currently, Dan Haley and the AMS shop at USDA, people are talking to each other. We are all in the same room. Hey, you've got to start somewhere!

What has NACA done? How have we contributed to the process? As all of you in this room know, just last week, technical corrections to the 1990 Farm Bill were passed. Included was a formula that revised the fee structure for pesticide manufacturers so that EPA could meet its 1988 goal of \$14 million a year. This clearly demonstrates the pesticide industry's commitment to the reregistration process.

The minor use issue will be addressed next year by Congress and I guarantee you that NACA member companies will continue to work with grower groups and Congress to try to find workable, practical solutions to current problems.

Thank you for the opportunity to be with you today.

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The National Agricultural Chemicals Association is the not-for-profit trade organization of manufacturers, formulators and distributors of agricultural crop protection and pest control products. NACA's membership is composed of companies that produce, sell and distribute virtually all the active compounds used in crop protection chemicals.

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OUTLOOK FOR U.S. AQUACULTURE

David J. Harvey
Agricultural Economist
Economic Research Service
U.S. Department of Agriculture

The theme for the 68th annual Outlook Conference is "new opportunities in agriculture." This seems especially appropriate for the aquaculture session. First, aquaculture businesses are now generally recognized as agricultural operations. Second, with only a few exceptions the history of aquaculture is short and much of its growth lies ahead. These two factors point toward the aquaculture industry itself as an opportunity for agriculture to expand into a whole new area of production.

While many segments are new, aquaculture has developed into a sizeable industry. There is also good reason to believe that the aquaculture industry as a whole should continue to grow through the remainder of the 1990's, but probably at a slower pace than seen in the 1980's. While the industry is expected to grow, the expansion will be neither uniform nor continuous across all the various species. An example is the catfish industry where falling prices reflect grower production outstripping processor ability to market the product without cutting prices. Many segments of aquaculture will have to deal with issues that could constraint their continued growth.

The issues that will affect the aquaculture industry cover almost all aspects of production and marketing. Some of the major issues affect the demand for aquaculture products and others affect the supply. However, many of these issues are interrelated and changes in one area will impact other areas of the industry.

Issues Affecting Future Demand for Farm-Raised Seafood

Basic to the continuing growth of the domestic aquaculture industry is the future demand for seafood products. Here are some of the items that may impact the demand for aquaculture products over the next several years.

Wild-catch supply - Aquaculture production has increased greatly over the last decade but domestic wild-catch is still the largest source of domestic consumption. U.S. landings of edible seafood rose from 3.7 billion

pounds in 1980 to 7.3 billion in 1990, up 97 percent. However, increased landings of Alaska pollock accounted for over 3 billion pounds of the gain. Experts estimate that landings of Alaska pollock are now close to their maximum sustainable yields.

Pollock only yields 15 to 20 pounds of edible product per 100 pounds of fish, so the increase in edible products has been much less than the rise in landings. While higher domestic landings have increased the supply of edible product, exports have risen at an even faster rate. Higher exports and stable imports mean that seafood supplies for domestic consumption have fallen over the last several years.

For most wild-catch species, it is doubtful that the domestic industry can supply significant additional amounts of seafood without endangering its long-run survival. Therefore, increases in demand will have to be met chiefly through rising domestic aquaculture production or greater imports.

U.S. per capita seafood consumption grew over 20 percent between 1980 and 1987. However, consumption peaked in 1987 at 16.2 pounds (edible weight) and in 1990 was 15.5 pounds, the same as in 1986. Even if per capita seafood consumption remained flat during the 1990's, aquaculture sales could still grow. U.S. population growth alone would add 40 million pounds to the demand for seafood each year. This would mean an additional 80 million pounds of farm sales yearly. Also, the aquaculture industry could capture a larger percentage of existing markets, especially in the \$5.2-billion seafood import market. Aquaculture is already a major force in some parts of the domestic market. In 1990, fresh and frozen finfish consumption was 6.6 pounds per capita, over 10 percent of which was U.S. farm-raised catfish.

Food safety - The general public has become more and more concerned with the safety of the food they consume. This applies to seafood due to concerns with pollution of ocean waters and how well the product is handled after harvesting. Already some States have warned consumers about the possible dangers of eating raw molluscan shellfish.

However, food safety concerns could have a favorable impact on aquaculture products. Aquaculture producers could benefit from these concerns by promoting their high safety standards. Producers could also develop brand names and associate them with a quality product. Of concern for the inland portion of the aquaculture industry is the use of fertilizers and pesticides on nearby cropland or the presence of these chemicals in water sources.

Food labeling - The food labeling issue deals with making more nutritional information available to consumers for informed decisions about their diets and to more easily compare alternative products. More comprehensive labeling may boost the consumption of seafood in general and aquaculture products in particular because most seafood has less fat and cholesterol than meat and poultry products.

Price of competing products - While media reports have extolled the health benefits of fish consumption, the slowing economy has probably worked against eating more fish. Many seafood products are relatively more expensive than competing protein products, such as poultry, although true price comparisons need to be on an edible weight basis. Between 1986 and 1990, retail seafood prices rose 25 percent, considerably faster than prices for pork (21 percent), or poultry (16 percent). As aquaculture production increases, the production costs for many species will decline or increase at a rate slower than inflation. These may make aquaculture products less expensive relative to other protein sources.

Health issues - Higher consumption of seafood has been promoted from both nutritional and dietary standpoints. Seafood is beneficial for dieters due to its relatively low calorie levels. To take full advantage of this market, aquaculture producers need to promote convenient cooking methods that add as few calories as possible.

A second aspect of the health issue is the fact that most seafood products are low in fats and cholesterol. Some seafood products may also benefit from the linkage of omega-3 fatty acids and a reduced risk of heart disease. Aquaculture nutritional research is currently working on special finishing diets that would boost the levels of omega-3 fatty acids in farm-raised fish.

Foreign markets - Currently, the majority of U.S. aquaculture production is marketed domestically. For most species, the domestic market has provided enough room for growth, but as the industry expands it should not neglect the possibility of expansion in foreign markets. Japan is by far the largest export market for U.S. seafood, but Europe could also prove to be a growth market. Landings of wild-catch seafood in these countries has been flat over the last decade. European countries do have a domestic aquaculture industry, but it is concentrated in the salmon, trout, and mussel area. This might present a market opportunity for some of the other species grown in the United States. The European market has a larger population than the United States, a relatively high standard of living, and an overall seafood consumption level higher than the United States.

The Japanese market accounted for 57 percent of the quantity of U.S. edible seafood exports in 1990, and 64 percent of their value. While the Japanese population is expected to show only slow growth, income levels are strong, and they traditionally are large consumers of seafood products. These factors may favor targeting high-end specialty products to the Japanese market.

Trade - As the domestic aquaculture industry expands its marketing to other countries, it may find itself caught up in conflicts on trade issues. Probably the largest hangup for the continuing GATT negotiations has been trade issues involving agricultural commodities. As aquaculture grows, it may well experience many of the same type of trade issues. An

example of this type of issue was a "dumping" ruling this year against Norwegian salmon farmers. The U.S. International Trade Commission ruled that exports of Norwegian salmon to the United States were subsidized and sold at less than fair market value.

While trade conflicts could involve any number of issues, some of the most likely areas will be: (1) inspection or sanitation, (2) chemical usage, (3) government subsidies, and (4) other non-tariff barriers. The U.S. seafood industry is still struggling with the issue of developing a comprehensive inspection program that would minimize the chances of any harmful product being marketed. Discussions are still centered on the nature of the inspection process and tests used. The domestic industry is trying to ensure that any standards adopted apply to imports.

Trade disputes could arise over what constitutes acceptable levels of contamination. This is not simply an import issue because the United States is also the largest exporter of edible seafood. Companies exporting wild-catch seafood and some domestic aquaculture companies have already had to deal with this issue, but most aquaculture firms are not exporting a large amount of their production.

Closely aligned with the inspection issue is the trade issue of what chemicals or therapeutic compounds can be used in aquaculture operations. This is an especially volatile issue because a number of chemicals have been approved for use in other countries that are not approved for use in the United States. For domestic producers, this would appear to present importers with an unfair advantage. The expressed concern is that if foreign growers want to sell to the United States, they should be held to the same rules as domestic growers and should not be allowed to use chemicals not approved for use in the United States. Like the inspection issue, this is a two-way street--some chemicals used here are not approved for use in other countries. This issue is of great concern to domestic growers because there are relatively few chemicals currently approved for use in aquaculture. Over time, this may become less of a conflict as the aquaculture industry grows and chemical companies try to expand their markets by having their products approved throughout the world.

Other trade issues could include such things as forms of packaging restrictions, environmental restrictions, subsidies, wage rates, and protection of certain species. In its position as both a major importer and exporter of seafood products, the United States could be involved in quite a few seafood trade disputes.

Issues Affecting Aquaculture Supply

Changing industry methods and structure - The domestic aquaculture industry continues to change in response to new technologies used in different growing systems for fish or shellfish and the increasing biological knowledge needed to produce a growing number of species.

U.S. aquaculture growers, who tend to produce only one species each, are divided into three main groups. The first group is of the established industries, such as growers of catfish, trout, and salmon. They are characterized by relatively well developed production systems, climbing output, and falling real prices. Another characteristic of these industries is the increasing sophistication of processors and development of further processed and branded products.

The second group consists of producers raising species that have been somewhat successful commercially, but who are still searching for the best growing and culturing methods. This group is represented by producers of such species as hybrid striped bass, tilapia, and some shellfish. These growers are relatively small, but have rising production levels and many different production methods.

The third group is made up of growers experimenting with species to determine whether they have potential in commercial aquaculture. These species could be totally new to aquaculture or where successful production has not occurred in a farm situation. This category would include walleye, sturgeon, and halibut. This group has only minimal production and additional research is needed on different aspects of the production cycle.

One of the chief questions facing the domestic aquaculture industry is what will be the major farm-raised species in the future. There are two ways to approach this question. First, assume that there are no radical changes in production technology. This would rule out the wide-spread adoption of intensive indoor recirculation systems. In this scenario, the production of fish and shellfish would probably be spread over a wide number of species. Domestic production would still be dominated by the catfish, crawfish, and trout industries, but would add a number of species that are suited to different areas of the country. The common thread between the different species would be relatively high market values and limited wild stocks available. The high market values would provide growers with the incentive to take on the risks of experimenting with new species. The limited wild stocks would allow growers to have positive price expectations.

International aquaculture competition - Presently, most domestic aquaculture producers compete not only with other domestic growers, but with foreign producers of the same product. The two exceptions to this rule are catfish and crawfish--only a very small percentage of their total consumption comes from imports.

Aquaculture production outside the United States is split into two main groups. The first group are producers rapidly adopting more advanced technologies and becoming more intense in their use of inputs and capital. These aquaculture operations are oriented towards producing chiefly for the export markets. This process will probably be duplicated with other high-value products. However, after successful production, farmed output has risen very fast for new species. This

undermines prices and places pressure on growers to improve growing methods and reduce production costs. As growers have adopted new techniques, prices have declined, if not on a real basis then on a nominal basis. The second group of producers are chiefly subsistence farmers or growers selling on the local market.

The United States, Japan, and a few other countries will be the chief targets for the producers of high-value aquaculture products. Therefore, domestic growers of high-value species will face increasing competition from foreign growers and domestic competitors.

International competition in the sale of aquaculture products should increase. While the United States is a major producer of some aquaculture commodities, many countries are strongly supporting fish-farming research and development.

Enhancement of wild stocks - Aquaculture production can help wild species recover from over-harvesting. Mortality rates for fish are highest at the very beginning of their life cycles. Hatchery techniques have been developed to grow salmon until they reach a size where their survival chances are much greater. The release of large numbers of salmon smolts has helped increase the annual harvest.

However, it is more difficult to carry out a stock-enhancement program for species that do not return to spawn in clearly defined areas. A second stumbling block is funding for the hatcheries. Many fisheries stocks are regarded as common property resources. Unless funding for the hatcheries was done through general tax revenues, some method of taxing those harvesting the affected species would have to be developed.

Recently, the Snake River sockeye salmon population was listed as an endangered species. Attempts at population restoration will be made using hatchery raised salmon smolts. When the salmon smolts reach the ocean they commingle with salmon from other spawning areas. Preventing harvest of the endangered population may eventually mean restrictions on salmon harvesting in the Washington and Oregon areas. Restrictions over a wide area, would increase the demand for farm-raised salmon.

Incorporation of new technologies - Research projects underway are aimed at helping growers either reduce production costs or improve product quality. The list of areas where growers are changing production practices to incorporate new developments is extensive.

Efforts are underway in a number of countries to develop deep-water ocean farming systems. Effective deep-water farming techniques would greatly increase the available space for marine aquaculture. Offshore sites would also reduce bottom fouling and visual pollution, two of the major problems with current ocean net-pen aquaculture projects. Researchers are also examining methods of controlling or managing predators and using production sites with low-cost heat sources, such as near power generating facilities or geothermal sources.

Aside from improvements in production systems, the aquaculture industry is looking to improve the productivity of the fish and shellfish. One area is the development of hormones to control spawning behavior. Hormonal controls are being developed in three areas. First, to achieve spawning in species that will not normally spawn in captivity. Second, using hormones and other techniques to get species to spawn more than once a year. Third, using hormones or other techniques to achieve sex reversals to convert all the members of a population to the faster growing sex.

Much of the media interest in the changes affecting aquaculture have focused on such high-tech issues as biotechnology and gene transfer. But there are still many productivity gains to be achieved through better nutritional programs. There are only a few basic kinds of fish feeds presently available, those developed for catfish and those developed for trout and salmon. Growers of other species are essentially using one of these two feeds or ones that has been only slightly modified.

Gains in nutritional advances will come on many fronts. First, development of feeds specifically tailored to the needs of new species will increase the productivity of those species. Second, new feeding strategies will promote better growth or cut down the amount of fat in the product. Third, experimental trials are under way to develop feed formulations that use lower cost ingredients or byproducts from other industries.

Water availability - Water must be available in the right quantity and quality. In many areas, water availability could be a limiting factor on aquaculture expansion as the competition for water resources intensifies. In all cases, growers will be pushed to incorporate methods that maximize production from a given water resource.

Water recirculation - The continued research and interest in water recirculation is a response to possible water constraints. In its ultimate form, the only water needed would be to replace water lost through evaporation and the removal of fish manure. Except for limited production of some high-value species, water recirculation systems have not yet proven economical. Successful systems would open up aquaculture production to almost any area of the country.

Therapeutic compounds - Very few compounds have been approved for use in aquaculture operations. New therapeutic drugs to combat fish diseases are being tested, but the question is whether the market for such products will be large enough to justify the cost.

The lack of therapeutic drugs could constrain domestic aquaculture expansion. As growers seek to maximize production by raising production levels the crowding stresses the fish and makes them more susceptible to diseases.

Selective breeding - Aquaculture is just beginning to tap the potential gains available through selective breeding, a major means of increasing production efficiency. While fish generally are good feed converters, selective breeding programs are needed to obtain faster growth rates and disease resistance.

Some producers are using sterile fish or shellfish because they grow faster, have year-round marketability, and have the potential to be grown outside their native areas. Sterile fish or shellfish often have faster growth rates because their energy is directed to gains in length and weight instead of sexual development.

Genetic work - Research is also underway in a number of other areas. The transfer of genes from one species to another shows promise. Researchers are investigating the possibility of transferring the genes that control the production of growth hormones from one species to another to develop faster growing fish. However, it may be some time before developments in this field can be used on a commercial basis.

Grain prices - Much of the tremendous growth in the catfish industry has come in years when grain prices were low. With corn and soybean meals the major components of fish feeds and feed costs making up to 50 percent of variable production costs, any rise in grain prices would impact fish prices. However, if aquaculture producers have to pay more for grains, so do competitors in the beef, pork, and poultry industries.

Waste management - Disposal of waste products from aquaculture operations will grow as a problem in direct relation to the expansion of the industry. Problems regarding disposal of waste products can roughly be divided into two areas. First, the producer's problem of managing the waste (uneaten feed and fish manure) produced by the operation. The amount of waste material generated will be directly proportional to production. With increasingly restrictive environmental regulation, disposal of these materials will become a greater problem in coming years.

Stricter controls will pressure producers to reduce wastes as much as possible. Reduction of waste per pound of production can be accomplished by fish that are more efficient feed converters. Other avenues to explore are feeding methods that result in less wasted feed.

The second half of the waste product problem falls on the processor. With more total production being sold as fillets or other further-processed products, the waste disposal problem of the processor grows. The lower yields on filleted products result in a greater volume of waste products. One solution would be to develop uses for waste products as inputs in the feeds of other animals. Current examples are the use of some catfish processing waste in poultry feeds and research on the feasibility of composting fish waste.

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OUTLOOK FOR GENETICS RESEARCH AND APPLICATION IN AQUACULTURE

Rex A. Dunham

Associate Professor, Department of Fisheries and Allied Aquacultures,
Auburn University, Alabama 36849

Aquaculture production in the United States has grown dramatically in the United States during the past two decades and will become increasingly important as demand for fish products increases, world harvest by capture fisheries reaches a plateau and human population numbers grow. Channel catfish, Ictalurus punctatus, production accounts for the majority of aquaculture production and growth. Trout, crawfish, and salmon are other major species with Morone bass and oysters also being fish and shellfish that are commonly cultured.

Genetic research and its application has had a significant role in the development of aquaculture, and this role and impact will become increasingly important as aquaculture develops further. As space for aquaculture becomes more limiting, the necessity for more efficient production or increased production within the same amount of space will further increase the importance of genetic improvement of aquaculture species. The role of genetics in aquaculture and the outlook for genetic research and application in aquaculture will be discussed.

Domestication

The natural environment is, of course, much different than the hatchery or culture environment. Fish in the natural environment are at low density, have minimal exposure to diseases, must capture natural food and avoid predation and have little contact with man whereas fish in the culture environment are at high densities, are routinely exposed to diseases and low water quality, learn to feed on artificial feed and have close contact with man.

When wild fish are moved from the natural environment to the aquaculture environment, a new set of selective pressures are exerted on the population resulting in changes of gene frequencies and performance of the population, a process termed domestication, which occurs even without directed selection by man. Domestication effects are dramatic and are observed in fish in as little as one-to-two generations after removal from the natural environment, and domestication has had a key role in the establishment of aquaculture and the expansion of production. Domesticated strains of fish almost

universally exhibit better performance than wild strains in the aquaculture environment. Domestication effects will have an ongoing impact on aquaculture. Domestication results in an increased growth rate of 3-6% per generation in captivity for channel catfish, and not surprisingly, the oldest (80 years) domesticated strain of channel catfish, Kansas, has the fastest growth rate of all strains of channel catfish. Utilization of domestic strains instead of wild strains, and use of available, high performance strains is the first step in applying genetic principles for improved fish culture management.

Catfish

Selection has increased the growth rate of channel catfish by 20%. Selection for growth rate has been attempted for several strains of channel catfish and all have responded. Selected lines have been released to the catfish industry, and these fish have demonstrated their superior growth in the farm environment. However, several farms report difficulty in spawning these selected lines indicating the need for additional research on the reproduction of catfish and the interrelationships between growth, nutritional requirements of fast growing fish and reproduction. Several farms have initiated their own selection programs for improving growth of catfish. A release of a line of channel catfish with both increased growth and decreased fat percentage is being initiated. Fat content is important in catfish not only for health reasons, but also for keeping quality during frozen storage, and for the prevention of off-flavors during culture. Selection for other economically important traits has not been attempted. However, heritabilities and genetic correlations for major culture traits of channel catfish will be available soon, which will allow the formulation of selection indices and the evaluation of multiple trait selection for simultaneous improvement of several performance traits.

Intraspecific crossbreeding of channel catfish can also improve growth rate by 20%. However, only 55% of the crossbreeds evaluated grow faster than both parental strains. Domestication effects are also important in crossbreeding programs. Domestic x domestic crosses are more likely to yield positive heterosis than domestic x wild crosses. There are indications that intraspecific crossbreeding of channel catfish can also improve disease resistance, age at sexual maturity and angling vulnerability. Recent research indicates there may be maternal strain effects on combining ability for growth rate and paternal strain effects on body conformation. If these observations are verified, future crossbreeding programs may utilize maternal strains to influence growth and paternal strains to influence body conformation. Some catfish farms have initiated intraspecific crossbreeding programs and have had positive results. Recent research also indicates, the combination of selection followed by crossbreeding may produce faster growing crossbreeds than crossbreeding alone.

Different species of catfish have a variety of traits that are desirable and could be utilized by growing a particular species or through interspecific hybridization. Channel catfish has the overall genotype and performance

most suited for culture, and culture of this species accounts for virtually all farm-raised catfish production. However, some farms have initiated culture of blue catfish, I. furcatus, after concluding that it grows faster than channel catfish, contradictory to earlier findings. Blue catfish have the advantage of higher dressing percentage, greater ease of harvest by seining and increased resistance to the channel catfish virus and Edwardsiella ictaluri. Apparent contradictions in the relative growth rate of channel catfish and blue catfish are likely a result of domestication and strain effects. The fastest growing strains of blue catfish grow faster than some, but not all strains of channel catfish. However, blue catfish may be advantageous for culture in some environments, and in the short term an increase in the culture of blue catfish is likely.

The best genotype for most culture of catfish is the interspecific hybrid between channel catfish females and blue catfish males. This hybrid exhibits 20-100% faster growth depending upon the environmental conditions, higher dress-out percentage, increased disease resistance, increased tolerance of low dissolved oxygen, and more vulnerability to harvest by seining or angling compared to channel catfish. Widespread culture of this hybrid would have dramatic effects on catfish culture and profits. Gross earnings could easily be increased by \$150 million dollars at the pond bank by utilizing the hybrid ignoring value added (4-5 fold multiplier) to the entire catfish industry. Unfortunately, the culture of this hybrid has been very limited in the commercial sector because of reproductive isolating mechanisms preventing consistent hybridization between the two parental species. Recent identification of strains of blue catfish that more readily hybridize with channel catfish and improvement of artificial spawning technology should allow the commercialization of the channel-blue hybrid. Once the technology for hybrid production is accepted, a 4-5 year lag will exist before the hybrid is the primary genotype cultured because of the current shortage of blue catfish brood stock.

The performance of triploid channel and hybrid catfish has been evaluated to increase production of catfish. However, triploids do not grow as rapidly as diploids in commercial settings, have no dress-out advantage until they reach a size and age in excess of that normally marketed and have decreased tolerance of low dissolved oxygen. Unless the desired harvest size of catfish increases dramatically, which is doubtful, little or no advantage exists for using polyploid catfish.

Sex reversal and breeding programs have been developed which allow the production of all-male channel catfish with the genotype XY. Monosex male culture of channel catfish would usually be desirable because males grow faster than females in almost all strains of channel catfish. This technology is not now commercially feasible because one generation of extensive progeny testing is required to identify XY females capable of producing 75% male progeny, and two generations of progeny testing are required to identify YY males capable of producing 100% male progeny. The sex reversal and breeding program will become commercially viable if genetic markers for the Y or maleness chromosome in channel catfish are identified which will allow the elimination of the tedious and expensive progeny

testing. If YY males also grow faster than XX females, the technology to produce all male populations of the genotype YY will be available in 5-10 years which will not require further progeny testing or the further use of genetic markers.

Crawfish

Selection for increased growth rate of a wild strain of red swamp crawfish, Procambarus clarkii, was unsuccessful. However, size and age at sexual maturity were negatively correlated indicating potential to indirectly select for increase size at harvest, although not rate of growth, by selecting for delayed sexual maturity. Heritability estimates indicate potential for increasing percentage of tail meat in red swamp crawfish. Attempts to hybridize American species of crawfish have been unsuccessful. Concern exists that selective harvesting practices in the crawfish industry have decreased the growth rate or possibly the size at sexual maturity. Genetic improvement programs within the crawfish industry are non-existent, unless introductions of exotic species of crawfish from Australia are considered a genetic management strategy.

Trout and Salmon

Sex reversal and breeding programs are having a major impact on salmonid culture in the United States and in the world. The utilization of all female monosex rainbow trout, Oncorhynchus mykiss, XX genotype, is gaining popularity in the United States, and all-female populations are used exclusively in the United Kingdom. Female salmonids are superior for culture because they grow faster than males, and do not have the precocious sexual development that some males have which decreases flesh quality. The first culture of all-female salmon populations in North America and Europe has been initiated. Two-three percent males have been reported in the North American "all-female" populations of rainbow trout and salmon which is indicative of polygenic inheritance for sex determination with modifying loci for sex, similar to that found for tilapia. All female XX lines of rainbow trout in the United States have been generated by gynogenesis followed by sex reversal, and those in Europe generated by sex reversal followed by progeny testing.

In the United Kingdom, all-female triploid rainbow trout are cultured. The triploid females have increased growth compared to diploids after the diploids reach the size where sexual maturation slows growth and decreases flesh quality. This is important in the European market which demands a large fish, but triploid rainbow trout are not beneficial to trout producers in the United States where a smaller fish is marketed.

Salmonids have responded to selection for increased growth rate resulting in a growth improvement of approximately 20%. Some trout and salmon producers have implemented selection programs to improve growth rate of salmonids. Fast growing strains of rainbow trout have been provided to the trout industry on an informal basis by government agencies. Feed conversion efficiency is also a heritable trait in rainbow trout. Several reproductive

traits of salmonids are highly heritable, especially age of sexual maturity and time of spawning. Although different strains of rainbow trout already spawn over widely varying spawning dates, ten generations of selection advanced spawning date by 60 days. Selection programs for carcass quality and quantity have also been initiated. Selection to improve disease resistance has been successful in salmonids. Unfortunately, negative genetic correlations exist between resistances to some diseases. Some salmonid farms have initiated selection programs to increase disease resistance.

Intraspecific crossbreeding programs are not widely used in the salmonid industry. A small percentage of crosses have the combining ability which allows growth superior to that of the fastest growing parent strain. Initial research indicates disease resistance and reproductive traits such as egg size can be improved through crossbreeding. Interspecific hybridization has not produced any salmonid hybrids with aquaculture potential.

Oysters

Selection programs have also improved growth rate and disease resistance in the American oyster, Crassostrea virginica. Many oyster farms conduct their own selection programs. Intraspecific crossbreeding has not yet shown great promise for improving oyster production as the local parent strain usually grows the fastest. Interspecific hybridization of oysters has shown some promise when viable hybrids could be obtained. The use of hybrids or introduction of exotic species of oysters could increase oyster production on the east coast of the United States, but these two approaches are neither socially or ecologically acceptable.

The use of triploid oysters can enhance oyster culture primarily by delaying sexual maturity and increasing flesh quality, and secondarily by allowing some growth improvement. Geographic variation in culturists' attitudes affects the acceptance and utilization of triploid oysters. Triploid Pacific oysters, Crassostrea gigas, are commonly cultured on the West coast, and also in France and Australia, however, triploid induction is seldom utilized in American oyster culture on the East coast of the United States. The advantage of the triploid oyster is minimized or lost in culture situations where food is limiting. This is an important point which may be relevant to other genetic improvement programs of shellfish and finfish.

Other Species

The striped bass, Morone saxatilis, -white bass, M. chrysops, hybrid is one of the few examples of an interspecific hybrid being utilized in aquaculture. Culture characteristics of this hybrid are superior to both parent species. Domestication of striped bass may allow culture of this parent species, but in the near future the hybrid which can be cultured in a larger geographic area, should account for the majority of Morone aquaculture production.

The production of triploid grass carp, Ctenopharyngodon idella, is another example of successful application of polyploidy in U. S. aquaculture. The triploid genotype results in functional sterility which allows application of this exotic species for aquatic weed control where diploid grass carp are still illegal. Increased application of triploid induction may be required in the future for culture of useful exotics. However, this still requires diploid brood stock since most tetraploid ($4N \times 2N$ theoretically yield $2N$ progeny) fish die at embryonic or young ages. These problems in controlling the accidental release of diploid exotics may be circumvented by using sex reversal and breeding to produce monosex populations.

Genotype-Environment Interactions

The relative performance of different genotypes can change when the environment changes. The best genotype for one environment is not necessarily the best genotype for a second environment. For this reason, caution should be exercised when attempting to extrapolate genetic research in small experimental units to relative performances observed in commercial environments, and the most valuable genetic research is that conducted in environments that most closely simulate commercial environments.

Genotype environment interactions are prevalent in aquaculture. However, genotype-environment interactions are minimal or non-existent when comparing growth of strains or lines of channel catfish in different culture units such as aquaria, tanks, cages and ponds and at different stocking densities. However, genotype-environment interactions are large and significant when comparing growth of different species, intraspecific crossbreeds, interspecific hybrids or polyploids of catfish. The best genotype for ponds, the channel catfish female \times blue catfish male, has mediocre growth in aquaria, tanks and cages. Behaviors, nervousness and aggressiveness, are the factors causing genotype-environment interactions for the channel \times blue hybrid and triploid channel catfish, respectively.

Genotype-environment interactions are not common in salmonid experiments, however, again, genotype-environment interactions are more likely when crossbreeds are involved. Genotype-environment interactions are common in oyster culture. Usually, the local genotype has the best performance, but is not the best oyster when transferred from its geographic region. Genotype-environment interactions appear to be the rule rather than the exception in species that can feed low on the food chain, either with fertilization and manuring or with artificial feed, such as common carp, Cyprinus carpio, or tilapias.

Aquaculture Genetics and Genetic Conservation

The general perception is that the goals of aquaculture and genetic enhancement are antagonistic to those of genetic conservationist. They should not be. Natural populations, their genes and genetic structure should be preserved for inherent ethical reasons and stewardship as well as potential reasons of ecological importance. For less than altruistic reasons, aquaculturists should also be concerned about preserving natural

populations as natural gene banks to be used as a future resource. The natural environment and natural populations are the best possible germplasm resource centers. Additionally, genetic conservationist should be supportive of genetic improvement programs for aquaculture species. The knowledge gained on the genetics of these species might also be useful for understanding and preserving genomes of natural populations. Overexploitation is one of the largest, if not most important factor, endangering not only the genetics, but existence of natural populations. Genetic enhancement of aquaculture species, and associated efficiency and increase of production should allow both the preservation of habitat and relief on harvest pressure of both the wild aquacultured species in addition to other species.

The genetic impact on wild populations from the interaction with domestic populations has been minimal and will continue to be minimal. Wild strains are usually more competitive than domestic strains in the natural environment. Additionally, it is even difficult to genetically alter established stable populations of wild fish by introducing wild genotypes from other locations. In biology, there are always exceptions to the rule and the potential impact of domestic populations on wild populations should not be ignored. Preliminary data indicates domestic salmon are competing with wild salmon in Norway. Genetic impacts and impacts of exotic species increase with distance from the equator as both ecological diversity and genetic variation within a species of fish decreases with distance from the equator. When species diversity is low, exotic introductions are more successful. Another unknown is what positive impacts the interactions of both domestic and wild strains might have on genetic variation and survival of some fish species and populations.

Genetic Engineering

Recombinant DNA technology and genetic engineering allow a new biotechnology that became feasible for application to aquaculture species during the 1980's. Research in this area is growing rapidly. Currently, about half of the gene transfer research is with small laboratory species which may or may not be applicable to aquaculture species, and the other half with major aquaculture species such as catfish, salmonids and carps.

Originally, fusion genes with origins from mammals, birds, insects, bacteria and viruses were transferred to fish embryos by microinjection. New gene transfer techniques for fish such as electroporation are on the verge of widespread use. A large number of fish genes have been isolated during the last couple of years, and a long list of fish genes is growing for study of gene expression and transfer in fish. These genes may have application for enhancement of growth, reproduction, disease resistance and cold tolerance.

Transgenic fish produced by microinjection are mosaics which do not possess the foreign DNA in every cell, however, many of these fish still transmit the stably integrated DNA to their progeny. The resulting F₁ transgenics have the foreign gene in all of their somatic cells and the parent germ

cells and usually transmit the foreign DNA to their progeny in expected Mendelian ratios.

Numerous promoters have been evaluated in transgenic fish and they vary greatly in their ability to allow expression of foreign DNA. CMV, RSV-LTR, beta-actin and chicken delta-crystallin are constitutive promoters that allow expression of foreign DNA in the host species. Mouse metallothionein and rainbow trout metallothionein are inducible promoters which have allowed expression in transgenic fish. Deletions, modifications and rearrangements can drastically strengthen or weaken the ability of these regulatory sequences to produce mRNA. Transgenic fish commonly produce the foreign gene product in tissues and cells where expression is not normally found since the artificial regulatory sequences apparently circumvent natural regulatory mechanisms and feedback.

Positive biological effects have been exhibited by transgenic fish. All of this research focuses on the transfer of foreign growth hormone gene constructs into fish. The results are basically consistent. Several species including loach, common carp, crucian carp, Atlantic salmon, channel catfish, medaka and northern pike containing either human, bovine, or salmonid growth hormone genes are reported to grow 10-80% faster than non-transgenic fish in aquaculture conditions, if the proper promoters are utilized.

The most thorough study is that of the transfer of the rainbow trout growth hormone cDNA driven by the RSV-LTR promoter into channel catfish and common carp. Transgenic individuals of some families of carp and catfish grow 20-60% faster than their non-transgenic full-siblings, but in some families no differences exist. Differences in genetic background, epistasis, copy number of the foreign gene, insertion site and level of expression are logical explanations for these results, and also illustrates that a combination of traditional breeding programs such as selection along with gene transfer will likely be necessary to develop the best genotypes for aquaculture.

Genetically engineered fish will be ready for field testing and commercialization in the near future. However, government regulation, public fear, lack of food safety data and lack of environmental risk data will be impediments to the commercialization of genetically engineered fish. The majority of the U. S. population is urban, only a few individuals produce all of our food and the general public does not understand biology or where and how their food is produced. Both public education and demonstration of food safety will be necessary before there is widespread public acceptance of genetically engineered fish as food. Environmental risk data on genetically engineered fish is needed.

Many good and reasonable regulations are being developed and implemented for genetically engineered organisms and fish, however, the evaluation of genetically engineered fish and assessment of their environmental risk will be slowed by some inconsistencies in State and Federal regulations.

One example is the definition of proper confinement. Based on earlier research with bacteria, viruses and plants, government and scientific consensus is that indoor confinement is of lower risk than outdoor confinement. Fish are a different organism with a different set of characteristics. In this case outdoor facilities such as ponds, a necessary experimental unit for some species and for collection of realistic data, surrounded by fences and netting, which are essentially analogous to greenhouses, supply as much or more confinement as traditional indoor facilities. Adequately designed pond systems are static which is more secure than systems requiring flowing water, and are larger making theft more difficult than in small indoor tanks. Outdoor and indoor facilities are equally susceptible to natural catastrophes such as floods, earthquakes, and high winds if they are at the same geographic location and elevation. Regulations for confinement of transgenic fish should not be based on whether or not the facility is indoors or outdoors, but upon existence of screens and filters, back-up barriers, security, location and elevation. This philosophy should be adopted if we are truly concerned about confinement of transgenic fish until their characteristics are known.

Summary

Genetics has had a major role in the establishment of aquaculture, and its development to its present status. The impact of genetics will increase in magnitude and importance as the aquaculture industry grows. Traditional genetics programs such as selection, crossbreeding and hybridization have improved or altered production traits such as growth, reproduction and disease resistance, and still has great potential for improvement of quantitative traits. New biotechnologies such as sex reversal and breeding and polyploidy have begun to have major impact on aquaculture production in the late 1980's and early 1990's by not only improving growth rates, but allowing major improvement of flesh quality in species which exhibit sexual dimorphic and sexual maturation effects. Traditional breeding has already been utilized in concert with these new biotechnologies. Genetic engineering will also allow dramatic improvement in aquaculture production. The combination of a variety of genetic improvement programs, traditional, biotechnological and genetic engineering, will likely result in the best genotypes for aquaculture. This will not happen until genetic engineering is proven to be a safe technology.

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THERAPEUTIC COMPOUNDS

ROSALIE A. SCHNICK
Registration Officer
U.S Fish and Wildlife Service

ABSTRACT

Aquaculture producers in the United States are facing a crisis that could severely hamper the production of high quality products. At a time when aquaculture is growing and demanding more and better ways of culturing fish and shellfish, the availability of registered therapeutants is decreasing. Only three therapeutants are registered as drugs with the U.S. Food and Drug Administration (FDA) and are available for controlling a limited number of diseases on a few aquatic species. Nine additional compounds are used therapeutically but are not labeled as such and are under scrutiny by the FDA, even though they have some other form of registration or allowance in aquatic situations from either FDA or the U.S. Environmental Protection Agency (EPA). Prospects are unfavorable for the development of new therapeutants. Only one company, Abbott Laboratories, is now pursuing the development, registration and marketing of a therapeutant for use on food fish at a cost of \$8 to \$10 million. No other company has openly expressed interest in registering new drugs for aquaculture because the \$3.5 million minimal cost of meeting the data requirements to register a drug far exceeds the current market value. Most of the 18 candidate compounds for drug registration do not have commercial sponsors that will support full registrations for aquaculture.

Increased regulatory scrutiny by FDA because of increased production in aquaculture may result in the loss of the use of these few chemicals. As examples, FDA is revising its procedures for issuing investigational new animal drug permits and guidelines on therapeutic uses, is questioning many previous rulings on aquacultural chemicals, and is requiring that new data be provided on all aquacultural chemicals to ensure their safety to humans and the environment.

A major initiative to obtain public funding for the full registration of therapeutants is required to solve this problem. A national plan coordinated by a national group must be implemented that would result in fully registered, high priority compounds that would meet many of the immediate needs, in obtaining interim provisions for handling emergencies and routine operations until funds can be obtained and data generated for full registrations, and in attracting pharmaceutical firms with products applicable to the aquaculture industry.

INTRODUCTION TO AQUACULTURE IN THE UNITED STATES

Production of aquatic species increased dramatically in the United States in the past decade due to increased demand for seafood and to the decline in harvests from natural waters. Overall, U.S. annual production of farmed fish and shellfish has grown over 305% since 1980. The per capita consumption of seafood has grown 20% over the past 5 years resulting in a record 17.3 pounds per capita in 1989. Over 30 aquatic species are currently being cultured commercially to produce protein as a human food source for an annual first-sales value of \$800 million and a total economic value of approximately \$7 billion.

Commercial aquacultural production of food is led by the channel catfish industry. In 1990, 415 million pounds of catfish (valued at \$325 million) were produced from ponds located mainly in Mississippi, Alabama, Arkansas, and Louisiana. Rainbow trout worth \$77 million in sales were produced on 940 farms throughout the United States with Idaho accounting for \$33 million. Production of salmon was 4 million pounds on the East Coast and 6 million pounds on the West Coast. Production of some finfishes, namely hybrid striped bass and tilapia (8 million pounds) are rising. Shrimp production remains low (2 million pounds annually). Production of mollusks (10 million pounds meat weight) and crawfish (90 million pounds) is based almost exclusively on natural reproduction in extensive culture situations.

Commercial aquacultural production on nonfood fishes involves the baitfish and ornamental fish industries. The baitfish industry is centered largely in Arkansas with the total value in excess of \$50 million. The ornamental fish industry is concentrated in Florida (tropical fish) and in Arkansas (goldfish) with an annual value of \$100 million.

Public aquacultural production, including rearing fish in Federal and State hatcheries, has provided fisheries managers with a valuable tool to continue the recovery of threatened and endangered species, the restoration of species of national concern, and the expansion of recreational fishing. In 1990, 77 Federal hatcheries produced about 196 million fish and 272 million eggs for fisheries management purposes. The total number of state fish hatcheries in the United States is 438. Government hatcheries (Federal, State and local) may not have the ability to provide species or strains of fish in adequate numbers to meet future management requirements. Private aquaculture is providing some recreational fishing opportunities now and has even greater potential to meet special and increasing recreational needs. Aquaculture is a critical component of the recreational fishing industry that generated direct expenditures of \$34.1 billion or a total economic activity of \$88.5 billion.

A significant obstacle to the continued growth of the commercial aquaculture and recreational fishing industries is the lack of federally approved therapeutants and other drugs to reduce disease-related mortality and to improve production efficiency and product quality. Over 200 million catfish and over 10 million trout were recently lost in one year due to disease.

The pharmaceutical industry is hesitant to become involved in the aquaculture industry because of lack of major markets. A recent estimate of the total annual market for therapeutants in all of U.S. aquaculture is \$10 million. Most pharmaceutical firms want annual sales of \$60 million or more. In addition, the \$10 million value is for all diseases and all species, whereas, the \$60 million value is for a single species (e.g., beef cattle) and one disease.

In addition, the consumer plays a very important role in the use and registration of aquacultural drugs and chemicals. Proof must be given to the consumer that the food products they eat are safe. In 1991, the National Academy of Sciences (NAS) in the United States released a document in which they concluded that chemicals are not effectively controlled in aquaculture. Because of the lack of control, NAS recommended that additional studies be completed on contaminant risks and that all imported seafood must meet U.S. standards for safety. A balance must be found between the need to protect the consumer and the environment while meeting the needs of the aquacultural industry. The growth of aquaculture is increasing throughout the world even though few therapeutants are fully registered to meet the increase. Where products are regulated, production losses have increased because there are not enough effective compounds registered to control diseases, especially bacterial diseases. Currently, the United States has 3 therapeutic drugs registered and available, Canada has two, the European countries have 15, and Japan has 24. Each country, or region, as in the case with the 12 countries in the European Economic Community, is trying to develop regulations and guidelines to protect the human food supply while addressing the unique conditions of raising a variety of species in an aquatic medium. Matters are complicated by the application methodology used in aquaculture; namely, many chemicals are applied directly to the water to control disease organisms on the cultured species. No country has completely solved the question whether this constitutes a drug or pesticide use.

ISSUES INVOLVING CHEMICALS IN AQUACULTURE PRODUCTION

Public and private aquacultural production in the United States is at a crisis point. Only three therapeutants (Terramycin for Fish, Romet-30 and Paracide-F) are both registered as drugs with the U.S. Food and Drug Administration (FDA) and available for use; these are limited to controlling only a few diseases on a few aquatic species. Pharmaceutical or chemical industries are not interested in extending the registrations of their products for use in aquaculture because of the significant registration costs, low return on investment, and increasing regulatory constraints. Some previously registered chemicals are no longer available. Masoten and Sulfamerazine are no longer manufactured because fish culturists purchased the cheaper generic or nonfish products. In Illinois, more than 20,000 northern pike died and hatching success of channel catfish declined from 85% to 28% because a waiver to use either diquat dibromide or sodium sulfite could be not obtained from FDA in time. The situation in Illinois is not an isolated incident. Several other states and the U.S. Fish and Wildlife Service (USFWS) have encountered difficulty in obtaining permission to use chemicals (e.g., luteinizing hormone-releasing hormone [LHRH] and oxytetracycline for marking walleye) that

previously were used in fish culture practices without question. Many of these chemicals are registered as aquatic pesticides or disinfectants but some also have therapeutic properties for which they are not labeled. Unfortunately, most of these chemicals will not be registered for therapeutic use in aquaculture because they have no commercial sponsor (e.g., sodium chloride and acetic acid) or they are no longer protected by patents (e.g., potassium permanganate and copper sulfate).

Several changes in procedures and rulings on chemicals are being made by FDA that can adversely affect aquacultural production. On August 29, 1991, FDA canceled the restricted Investigational New Animal Drug permit (INAD) for use of malachite green at selected federal and state hatcheries. Based on a reevaluation of the data, FDA concluded that "toxicological and environmental data are insufficient to determine a safe concentration for malachite green in edible tissues, drinking water, or any other environmental or occupational exposure." This decision will adversely affect efforts to restore depleted fish stocks and threatened and endangered species.

FDA is now revising both the procedures for issuing INAD's and the guidelines on therapeutic uses, partly because FDA perceives that chemical use in aquaculture is too loosely controlled. Previously, INAD's were occasionally issued for "compassionate use". As examples, FDA at one time recognized that little or no data were being generated on some compounds under INAD's (e.g., erythromycin) or that others could never be registered (e.g., malachite green).

Many former rulings by FDA or EPA are now being challenged by current FDA administrators. These rulings were made on a case-by-case basis and might no longer be valid under current policy. Therefore, we are uncertain if a chemical can be used as an aquacultural therapeutic without an approved New Animal Drug Application (NADA). As a further complication, FDA personnel do not want to be "flooded" with requests for rulings. To date, FDA has not codified these rulings or made them available to field investigators involved in compliance at FDA.

Certain chemicals used in water may not be considered drugs by FDA; however, if the chemical (e.g., salt) is for relief of stress, FDA would consider it a drug that is subject to registration. Some compounds that have therapeutic properties but are not registered as drugs include acetic acid, benzalkonium chloride, sodium chloride, benzethonium chloride, potassium permanganate, povidone iodine, elemental copper, copper sulfate, and diquat dibromide.

In response to a recent proposal by the National Fisheries Institute for a case-by-case testing of the non-food fish definition (concept that early life stages are not large enough to be eaten), FDA stated that chemicals used must be specific for early life stages because otherwise they might be misused on market size fish. In other words, a drug could not be used to treat for fungi, bacteria, or parasites in juvenile fish because the drug could also illegally treat market size fish. Any chemical that will control these organisms in early life stages may have the potential to control these or

similar organisms in market size fish. One possible solution would be to add a marker to the chemical to detect its illegal use. FDA seems to doubt that such a marker can be found.

Recently, FDA made it clear that new data must be provided to prove efficacy of the chemical and also address questions of safety to the environment and humans for all chemicals currently used in aquacultural production. This means that adequate information must be provided on mammalian toxicology, environmental safety, efficacy, target animal safety, residues, metabolism, and pharmacokinetics. Who will provide this information for the many aquacultural chemicals with no commercial sponsor (i.e., orphan drugs)? Few research facilities in the United States can perform the studies needed for registration because they lack certified Good Laboratory Practices (GLP) programs. Only efficacy studies do not have to be performed under GLP programs. Public funds must be obtained to generate the data necessary for proper registration of these essential aquacultural chemicals.

Prospects are poor for the introduction of new aquacultural therapeutants to treat the various diseases and variety of cultured species. Abbott Laboratories, the only company trying to register a new therapeutant, expects to spend \$8 to 10 million and 8 to 10 years developing and registering the antibacterial, sarafloxacin, for aquaculture worldwide, but only for control of enteric septicemia on catfish in the United States. At this time, Abbott does not expect revenues for the catfish market to warrant the additional expenses needed to expand the label to other fish species or other diseases. No other corporation has openly expressed interest because the minimum \$3.5 million cost of meeting the data requirements to register a drug exceeds the market value of any new drug.

Companies need a worldwide market to profit from an aquacultural drug. However, data generated for drug registration in one country are seldom accepted in another. Uniform testing guidelines and protocols are needed because the required tests are too expensive and too time consuming to be repeated from country to country. In addition, worldwide information on production and disease problems are needed so pharmaceutical firms can assess market potentials.

The continued growth of the aquacultural industry has prompted greater regulatory scrutiny. The major concern is the consumption by humans of unacceptable drug residues in fish tissues. Currently, there is no worldwide standard for maximum residue levels allowed in seafood (tolerances). Few withdrawal times (time from last treatment to consumption) have been established for aquacultural drugs partly due to the lack of reliable pharmacokinetic data. The methods for establishing withdrawal times varies greatly among countries and few methods consider the effects of temperature. Current technology permits detection of minute levels of a drug in fish tissue, but the risks associated with these levels are often unknown. Regulatory agencies need to assess these risks when establishing tolerances and determine suitable withdrawal times.

STATUS OF ALLOWED CHEMICALS

Only three therapeutants--Terramycin for Fish, Romet-30 and Paracide-F--are registered and available. These products are registered only for use on a few fish species and against a few diseases. If FDA requires all 59 fish species raised by the USFWS to be listed on each label, funding of \$6.1 to \$9.8 million would be needed. A variety of fish species are also raised for commercial purposes. As an example, Midwest producers culture 40 different fish species for food fish, stocking and fee fishing. If these additional commercial species cultured in the Midwest were added on the labels, another \$2.1 to \$3.4 million would be needed. Therefore, complete registration of just these three chemicals would cost a grand total of \$8.2 to \$13.2 million.

Nine other compounds currently used to control diseases have some form of registration or allowance granted by the regulatory agencies; however, the therapeutic uses for which the compounds are also currently being used are not included on the labels. These compounds include acetic acid, benzalkonium chloride, benzethonium chloride, potassium permanganate, povidone iodine, sodium chloride, elemental copper, copper sulfate, and diquat dibromide. Initial registration of each of these nine compounds for controlling just one disease pathogen in only one food fish species would require \$14 million. Funding of \$10 to \$16 million would be needed to cover the rest of the fish species and diseases for USFWS-reared fish, and \$3.2 to \$5.3 million for the additional commercial fishes cultured in the Midwest for a grand total of \$13 to \$21 million.

In summary, the total funding needed to completely legalize the 12 chemicals currently used therapeutically on all fish species cultured by the USFWS and the additional commercial species cultured in the Midwest is \$35 to \$48 million. If the concept of "crop groupings" (species grouping) for fish were accepted by FDA, those figures would decline to \$20 to \$32 million because target animal safety studies would not be required for each fish species listed on the label. However, comparative toxicity and physiological data are needed by FDA to allow "crop groupings."

STATUS OF NONREGISTERED CANDIDATE CHEMICALS

Therapeutants are urgently needed in aquaculture, but few are close to being registered. Registration of three antibacterials, the most important category of therapeutants, is actively being pursued. The complete registration package for sarafloxacin, used to control enteric septicemia on channel catfish (ESC) is scheduled for submission in early 1992; FDA will have 6 months to review the package. Data on erythromycin to control bacterial kidney disease in salmon are scheduled for submission to FDA in 1994 if no problems develop and research stays on schedule. Much more information and funding will be required before chloramine-T can be registered to control bacterial gill disease in juvenile salmonids.

The USFWS is continuing a screening program, funded by the Bonneville Power Administration, to find an antifungal agent to replace malachite green.

Additional funds are needed to expedite a program to replace malachite green as a antiprotozoan agent. Other parasitocides have received little interest.

One compound, levamisole, has considerable potential for use in aquaculture to stimulate the immune response of fish against a broad spectrum of diseases. Its use in aquaculture would be considered a drug use. The compound is already registered in cattle, swine, and sheep as a drug which implies that no additional toxicological studies would be required and the number of required environmental and metabolism studies would be greatly reduced. Yet no funding is available to support research on this important compound.

Aquaculture needs an anesthetic with a zero withdrawal time. Benzocaine is a good candidate because of its use in human medicine, but funding has not been adequate to make a major effort toward registration.

A variety of hormones are used to regulate the spawning of fish, but none are currently registered for that purpose. The USFWS is in the process of filing blanket INAD's to cover the current use of hormones and to generate efficacy data. Funding is needed to generate data on target animal safety, metabolism, and environmental safety.

If all of the candidate therapeutants and one anesthetic were each registered to control only one disease on only one food-fish species, the total cost would be \$18.8 million. An additional \$25 to \$40 million would be needed to cover the rest of the fish species and diseases for USFWS-raised fish and the additional commercial fishes cultured in the Midwest.

POTENTIAL SOLUTIONS TO THE REGISTRATION PROBLEM

The lack of registered drugs for aquacultural use is a worldwide issue and the solution lies in both national and international cooperation. The costs to fully register drugs for aquaculture far outweigh the market potential. In the United States, for example, \$3.5 million is needed to complete the minimum data requirements for registration of any single aquacultural drug. Thus, a worldwide market is needed to stimulate the pharmaceutical industry's interest in providing products for aquacultural production. Other actions are also needed to attract the pharmaceutical industry and to better regulate the use of aquacultural chemicals. Following are lists of national actions that can and should be taken.

A. STEP-BY-STEP APPROACH TO FULL REGISTRATION OF CURRENTLY REGISTERED OR ALLOWED CHEMICALS AND CANDIDATE COMPOUNDS

ACTION TO BE TAKEN	RESPONSIBLE ORGANIZATION
1. Define the most needed chemicals, prioritize them, and eliminate low priority chemicals from consideration.	Aquaculture groups

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| 2. Write petitions or resolutions to regulatory agencies urging decisions on high priority chemicals. | Aquaculture groups |
| 3. Consult with other regulatory agencies to determine how to regulate all of the water treatment compounds (e.g., copper sulfate and potassium permanganate) and determine their jurisdiction. | FDA |
| 4. Clarify the regulatory status of each chemical currently used in aquacultural production and categorize unregistered compounds into three categories: (a) compounds that should not be regulated, (b) compounds provisionally acceptable until designated additional data have been generated, and (c) compounds that are banned from use. | FDA |
| 5. Define, discuss, and negotiate data requirements for each priority chemical to be registered. | FDA and Aquaculture groups |
| 6. Develop methods or procedures to reduce data requirements for registration: | |
| a. Retrieve and submit any data that would be pertinent; | Aquaculture groups |
| b. Develop the "crop grouping" concept; | FDA, Aquaculture groups and researchers |
| c. Test the nonfood fish definition; | Aquaculture groups |
| d. Develop uniform testing guidelines and protocols; | FDA |
| e. Obtain and use reliable data from other countries; | FDA |
| f. Develop risk-assessment techniques that consider the unique cultural researchers conditions of aquaculture; and | FDA and researchers |
| g. Develop guidelines for establishing practical tolerances and withdrawal researchers times that protect the consumer. | FDA and researchers |

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| 7. Determine data requirements that need funding. | FDA and Aquaculture groups |
| 8. Develop public funding to generate the data needed for top priority chemicals and ensure accountability. | Aquaculture groups |
| 9. Select research facilities and researchers to generate data that operate under certified Good Laboratory Practices programs. | Aquaculture groups with FDA |
| 10. Submit completed data packages for review by FDA. | Aquaculture groups and researchers |

B. ACTIONS TO DEAL WITH CURRENT LACK OF LEGAL CHEMICALS IN AQUACULTURE

ACTION TO BE TAKEN	RESPONSIBLE ORGANIZATION
1. Promote the public funding of research needed to answer regulatory questions on high priority chemicals.	Aquaculture groups
2. Allow use of provisionally acceptable compounds for a reasonable period of time until data are generated for full registrations.	FDA
3. Develop a detailed plan to deal with the current the lack of legal chemicals for use in aquaculture.	Aquaculture groups
4. Inform all producers of aquatic species of the seriousness of the situation regarding legal use of chemicals in aquaculture.	Aquaculture groups
5. Encourage the development of international use codes and quality assurance programs that will promote the safe use of chemicals in aquacultural production.	Aquaculture groups
6. Promote the establishment of an international or national clearinghouse of information and data on aquacultural chemicals.	Aquaculture groups

7. Interact with regulatory agencies on appropriate matters that will aid the aquacultural industry (education, information, resolutions, petitions) thus applying pressure for action by regulatory agencies to accomplish what is needed.	Aquaculture groups
8. Develop familiarity with the aquatic animals and the cultural practices in aquaculture.	FDA
9. Promote and coordinate the development of uniform regulations, policies, guidelines, and protocols for tests on a worldwide basis.	Aquaculture groups with FDA
10. Develop mechanisms to provide emergency authorizations in a timely manner for therapeutic uses of chemicals not labeled groups for that purpose.	FDA and Aquaculture groups
11. Approve extra label prescriptions by veterinarians either with or without certified fish pathologists so that compounds registered as drugs in major food species might be used in aquaculture.	FDA and Aquaculture groups
12. Develop a mechanism to codify unregulated chemicals so that affected parties know the status of each chemical and its legal use.	FDA
13. Communicate with other aquacultural organizations to ensure that any initiative on chemicals is coordinated and in agreement with the priority needs of aquaculture.	Aquaculture groups
14. Establish special task forces to address and coordinate chemical issues involved with aquacultural production.	FDA and Aquaculture groups
C. ACTIONS TO ADD NEW CHEMICALS AND ATTRACT PHARMACEUTICAL FIRMS TO AQUACULTURE	
ACTION TO BE TAKEN	RESPONSIBLE ORGANIZATION
1. Develop criteria that allow crop groupings on the label rather than	FDA

- individual species; define the data needed to make those rulings.
2. Help gather published and unpublished data on the toxicity and physiological effects and of aquacultural chemicals to aquatic species to help develop the crop grouping concept. Aquaculture groups and researchers
 3. Develop or change regulations, policies, and guidelines that consider the unique cultural conditions of aquaculture. FDA
 4. Review the guidelines for mammalian safety and environmental studies to determine if they are similar to the guidelines of the Organization for Economic Co-operation and Development or other international guidelines and make changes where necessary to harmonize the guidelines. FDA
 5. Communicate with other regulatory agencies to maintain a worldwide awareness of developments in the use of chemicals in aquacultural production. FDA
 6. Develop criteria for determining the acceptability of data on aquacultural chemicals from other countries. FDA
 7. Develop risk assessment techniques to determine when minute residues of aquacultural chemicals are a problem. FDA
 8. Develop tolerances and withdrawal times that protect the consumer and the environment from hazardous residues but are also realistic and practical for the aquaculture producers. FDA
 9. Consider inherent withdrawal times that are associated with early life stages of fish. FDA
 10. Provide for exclusivity for pharmaceutical firms that have raw data for some studies so they will gain a reasonable period of legal protection for their products. FDA

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| 11. Encourage pharmaceutical firms to sponsor drugs for aquaculture by providing accurate production and disease figures. | Aquaculture groups |
| 12. Provide a mechanism for partnerships with pharmaceutical firms and public agencies to develop aquacultural chemicals. | Aquaculture groups |
| 13. Develop public funding for partnerships with pharmaceutical firms. | Aquaculture groups |
| 14. Select facilities and researchers to generate data that operate under certified Good Laboratory Practices programs. | Aquaculture groups with FDA |
| 15. Generate data in partnership with the pharmaceutical firms that will lead to registered therapeutants in aquaculture. | Aquaculture groups |

The lack of approved therapeutants in aquaculture is a serious problem. Solutions to these problems will require active national leadership. That national leadership must include effective communication, detailed coordination of actions to resolve issues unified cooperation among aquacultural groups, and an active, concentrated effort to obtain the public funding to conduct the necessary studies and produce the required data. At the Annual meeting of the American Fisheries Society on September 9, 1991, a workshop was convened to develop a national strategy to obtain registration of therapeutants for aquaculture. The workshop participants recommended that the Working Group on Quality Assurance in Aquaculture Production of the Joint Subcommittee on Aquaculture be the national group to help establish priorities, resolve issues with FDA, and mobilize support for public funding without public funding and a national plan, the aquaculture industries will remain in this crisis situation 5 years from now.

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OUTLOOK FOR TIMBER PRODUCTS

Robert B. Phelps
Economics, Trade, and Market Research Branch
Forest Inventory, Economics, and Recreation Research
Forest Service, USDA

Few timber products are consumed by individuals in the form in which they are initially manufactured. Instead, most move to various major markets where they are remanufactured or made a part of a product that is ultimately used by individual consumers. Thus, although consumer demand is the underlying force, direct demand for timber products is largely determined by the levels of activity in their primary end-use markets.

In my talk today, I will review trends in the economy and in the major timber products markets through the third quarter of 1991 and present consensus estimates of their prospective growth in the last quarter of this year and in 1992. I will then comment on what these trends suggest as to the consumption and production of the various major timber products.

General Economic Trends

The gross national product, a measure of the Nation's overall output of goods and services, and the most comprehensive indicator of total economic activity, rose at an annual rate of 2.4 percent to \$4,143.1 billion (1982 dollars) in the third quarter of 1991. This was far above the 2.8 and 0.5 percent declines in the first and second quarters and represented the economy's first positive showing since the third quarter of last year. Through the first 9 months of this year total GNP dropped 0.3 percent, down from the positive 1.2 percent annual rate shown in the first three quarters of 1990. Although apparently bottoming out in the first quarter, GNP in 1991 has remained below the average for all of 1990.

Many forecasters were surprised by the extent of the economy's show of strength in the third quarter, which was largely fueled by consumer spending, especially for durable goods, and to some extent by residential and nonresidential investment. Much of the increase apparently came in mid-summer, however, and several indicators, especially those related to consumer confidence, suggested that the economy was likely growing a little more slowly at the end of the quarter than at the beginning. Such factors as retail sales, industrial production, and capacity utilization were relatively flat.

These trends, along with other indicators, such as the still high rates of unemployment in several sectors of the economy, have led most analysts to forecast slightly slower growth in the months ahead. A growth rate in the last quarter of the year of about 2 percent would mean an average GNP for all of 1991 of about \$4,137 billion (1982 dollars), down about 0.5 percent from the average for 1990. Continued growth in 1992 at a slightly larger 2.5 percent, considered likely by many economists, would increase the average gross national product to \$4,240 billion for the year.

Major Domestic Market Trends

Construction of new housing units, which generally accounts for more than a third of United States consumption of softwood lumber and plywood and for substantial volumes of other softwood and hardwood timber products, has shown some improvement from the very low levels reached early in the year, though the recovery has been erratic and at a somewhat more sluggish rate than expected by most housing analysts. According to data from the Bureau of the Census, the seasonally adjusted annual rate of new housing starts rose about 2 percent to 1.1 million units in October after showing small increases in every month since March. Despite this generally rising trend, the number of units started during the first 10 months of 1991 were about 17 percent below the number started in January-October 1990. Much of this difference was due to weakness in the multifamily housing sector--down more than 40 percent--and was the result of a number of problems, including continued high vacancy rates in some areas and builder difficulty in obtaining construction financing. Single-family starts during the first 10 months of the year were about 12 percent below the year-earlier period.

Although mortgage interest rates have generally declined throughout the year, and are currently near three-year lows, continued problems with obtaining financing and the uncertainties associated with the general economic outlook have continued to impact housing demand. As a result, many analysts have revised their estimates of housing activity downwards from those made earlier in the year. Most forecasts currently assume continued slow improvement in last quarter of 1991, coupled with a somewhat more rapid recovery in 1992 if interest rates continue down and the economy shows a moderate expansion. Recent estimates of housing starts for 1991 range from 1.0 to 1.2 million units, with the consensus at about 1.05 million--down 12 percent from the volume started in 1990. This would amount to the smallest number of starts for any year since 1945. Analysts' forecasts for 1992 naturally have a somewhat wider range; however, most estimates available early in the last quarter show an increase of about 15 percent to the 1.2 million level.

As a result of the relatively smaller decline in single-family starts, they are expected to account for more than 80 percent of total starts in 1991, up from 75 percent in 1990. This is a plus for wood products, because single-family houses use more per unit and per square foot of floor area than is used in multifamily units. On the downside, available data indicate that average housing size has probably declined in 1991 for the first time in nearly 10 years. Shipments of mobile homes, about 11 percent below year-earlier levels through September, are likely to total about 170,000 units in 1991 and increase to 180,000 in 1992.

Total expenditures for maintenance, repairs, and improvements to residential structures, another major wood products market, has likely declined in 1991 after showing small increases in 1989 and 1990. The growth during both 1989 and 1990 was due entirely to increased expenditures for maintenance and repairs. These types of expenditures, which include such things as replacement or repair of broken plumbing or heating systems, usually cannot be postponed. On the other hand, improvements, such as the addition of a family room or an extra bathroom, ordinarily can be deferred until economic conditions are more favorable. Larger amounts of timber products are normally used per dollar of expenditures for improvements than are used for maintenance and repairs.

Bureau of the Census construction surveys show that through September expenditures for improvements (additions, alterations, and major replacements) averaged \$45.9 billion (seasonally adjusted annual rate, 1987 dollars), about 12 percent below expenditures during the same period in 1990. As noted earlier, this represented a continuation of the declines in 1990 and 1989. Data are not available as yet to determine if maintenance and repair expenditures will be large enough to offset the probable decline in improvements in 1991. Most analysts agree that the residential improvements segment of the construction market will turn around and continue to grow in the years ahead. However, short term increases are likely to be constrained by the same factors currently impacting the remainder of the housing economy.

Total nonresidential construction activity through the first 9 months of 1991 also has been weaker than during the same period in 1990. Expenditures through September averaged \$215.8 billion (seasonally adjusted annual rate, 1987 dollars), down 8.7 percent from January-September 1990. Most of the decline was due to a 22 percent drop in expenditures for private nonresidential building construction. A number of factors are apparently responsible for the decline, including, for example, the slowdown in economic growth, continued high office building vacancy rates in some major urban areas, and the problems in obtaining construction loans and nonresidential mortgages. Many of these factors will likely continue to negatively affect nonresidential construction in the months ahead. Studies have shown that nonresidential construction activity tends to lag behind the economy's recovery by three or four quarters. As a consequence, most economists expect that nonresidential construction expenditures are not likely to increase markedly until the second or third quarter of 1992.

The index of manufacturing production--an important indicator of the demand for pallet lumber, container board, and some grades of paper--was unchanged from September to October at a seasonally adjusted value of 108.9 (1987=100). This stabilization came after slow and somewhat erratic 3.5 percent growth since the low for the year was reached in March. The index of furniture and fixtures manufacture fell in October for the third month in a row; however, the index--100.6--indicated output less than 1 percent below that in July, and an increase of about 6 percent since the February low for the year.

Although total manufacturing and furniture and fixtures output have increased in the first 10 months of 1991, both remain below their averages for the similar period in 1990--down 2.7 and 7.2 percent, respectively. As a result of the relatively slow growth through the fall, most economists currently feel that total production in many industries in 1991, including the furniture and fixtures industry, will be below output in 1990, and will only begin to improve markedly as the economy picks up in 1992.

In summary, activity in most of the principal U.S. timber products markets has shown declines or somewhat slower rates of growth over the first three quarters of 1991 than in the first 9 months of 1990. In addition, prospective trends in several of the important indicators point to continued slow growth or possible declines in late 1991 and early 1992. The extent and duration of these market trends are still matters of conjecture; however, most analysts currently foresee improvements in the coming months. A turn-around in the construction markets would have a particularly positive influence on the consumption of many timber products.

International Market Trends

The United States is the world's leading importer of timber products--chiefly softwood lumber, wood pulp, and paper and board from Canada, and veneer and plywood from southeast Asia. The total value of these imports in 1990 was \$16.9 billion, about 3.4 percent of the value of all U.S. imports. In terms of roundwood equivalents (i.e., the estimated amount of wood required to produce the individual products), more than a fifth of our apparent consumption of timber products in recent years has been imported.

The United States is also a major timber products exporter, the value of which is second only to Canadian shipments in world markets. In 1990, the value of our timber products exports was \$15.6 billion--about 4.2 percent of our export total. Although we ship a wide variety of timber products to many different countries, our principal export markets are Japan for softwood logs and lumber, pulp chips, woodpulp, and paper and board products, and western Europe for lumber, plywood, woodpulp, and paper and board. China is also an important market for softwood logs.

Available data indicate that economic growth in some of our major European and Asian markets has remained relatively strong in 1991, while in others the economic and political situations have caused somewhat lowered demands for timber products imports. On balance, the total volume of U.S. wood products exports through the first three quarters of 1991 is somewhat smaller than in the first 9 months of 1990.

Looking forward to 1992, the likelihood is for a gradual improvement in the exports of most timber products. Several, though not all of our major western European trading partners expect a return to positive growth after some easing back in their purchases in 1991. Industry analysts also expect that shipments of processed timber products to our major Pacific Rim markets will be somewhat larger. U.S. imports, particularly of those products used in housing construction, should show some increase as the housing situation improves.

Timber Products Consumption, Trade, and Production

Softwood Lumber

According to data from the National Forest Products Association, softwood lumber consumption through mid-summer of this year was about 11 percent below that in the same period in 1990. The positive, though slow, growth in housing and some other markets in the fall suggests that demand has been rising and

will continue to increase in the final months of the year. Thus consumption for all of 1991 is estimated at 42.6 billion board feet (table 1), 6 percent below consumption in 1990 and down about 18.5 percent from the record 50.5 billion board feet consumed in 1987.

Imports, nearly all from Canada, have also declined in 1991. Through July, total softwood lumber imports were about 10 percent below the similar year-earlier period. Imports during the last months of the year are likely to increase somewhat in response to market demands. As a result, total imports for the year are likely to reach 11.5 billion board feet, down about 5.3 percent from the volume imported in 1990.

Exports through the first 7 months of 1991 have shown mixed trends. Shipments to Japan and Canada were down, while those to several European and Middle Eastern countries were up. Many observers feel that shipments to our largest export markets will continue relatively sluggish in 1991. As a consequence, exports for the year are likely to total about 2.9 billion board feet. This would be about 3 percent below the volume shipped in 1990.

Through mid-summer, U.S. production of softwood lumber was about 10 percent below output during the similar period in 1990, according to information from the Western Wood Products Association. With the slight improvements expected in the last months of the year discussed previously, production for all of 1991 should amount to about 34.0 billion board feet, 5 percent below production in 1990. Current expectations about the major softwood lumber markets indicate that increased production, imports, and consumption are likely in 1992.

After rising rapidly at mid-year, largely because of anticipated shortages that did not materialize, prices of domestically produced softwood lumber declined fairly sharply in August and have changed little since that time. The October producer price index was 125.6 (1982=100), down about 11 percent from the index for July, and only 1.4 percent above the average for 1990 (table 2). With the prospective slow increases in consumption in late 1991, as discussed earlier, prices likely will not rise markedly in the near future.

Hardwood Lumber

Data published by the National Forest Products Association show hardwood lumber consumption through mid-summer of 1991 down markedly from the similar period in 1990. If manufacturing markets continue at the current slow pace and furniture production does not turn around in the last months of the year, consumption is likely to drop to 9.0 billion board feet, about 9.6 percent below the 1990 total.

Hardwood lumber imports through August were almost 20 percent below those in the first 8 months of 1990 with some additional slowing expected in the last quarter. The total for the year is thus estimated at 0.1 billion board feet. Total exports for the year are expected to be 0.9 billion board feet, very near the volume exported in 1990.

With these trends in consumption and trade, hardwood lumber production in 1991 is projected at 9.8 billion board feet, down about 8.4 percent from output in 1990. Anticipated growth in the important hardwood markets suggests that increases in production and consumption are likely in 1992. Imports and exports also are expected to rise.

Table 1.--U.S. wood products production, consumption, and trade
(1988-90 actual, 1991-92 projections)

Product	Year	Domestic production	Imports	Exports	Apparent consumption
Softwood lumber (billion bd. ft.)	1988	38.1	13.8	3.3	48.6
	1989	37.5	13.6	3.4	47.7
	1990	35.8	12.1	3.0	44.9
	1991	34.0	11.5	2.9	42.6
	1992	35.3	12.1	3.0	44.4
Hardwood lumber (billion bd. ft.)	1988	11.4	.4	1.3	10.5
	1989	11.0	.3	.9	10.4
	1990	10.7	.2	.9	10.0
	1991	9.8	.1	.9	9.0
	1992	10.3	.2	1.0	9.5
Softwood plywood (billion sq. ft., 3/8-inch basis)	1988	22.2	.1	1.0	21.3
	1989	22.4	.1	1.4	20.1
	1990	20.7	(1)	1.6	19.1
	1991	19.4	(1)	1.3	18.1
	1992	20.5	(1)	1.5	19.0
Hardwood plywood (billion sq.ft., 3/8-inch basis)	1988	1.0	1.6	.1	2.5
	1989	1.0	1.9	.1	2.8
	1990	.9	1.6	.2	2.3
	1991	.8	1.4	.2	2.1
	1992	.9	1.6	.2	2.3
Particleboard ² (billion sq. ft., 3/4-inch basis)	1988	4.9	.1	.3	4.7
	1989	4.9	.2	.4	4.7
	1990	4.9	.3	.4	4.8
	1991	4.5	.2	.3	4.4
	1992	5.7	.2	.4	4.5
Hardboard (million tons)	1988	1.6	.2	.1	1.7
	1989	1.7	.3	.2	1.8
	1990	1.6	.2	.1	1.7
	1991	1.5	.2	.2	1.5
	1992	1.6	.2	.2	1.6
Insulation board (million tons)	1988	.9	.1	.1	.9
	1989	.8	(3)	(3)	.8
	1990	.9	(3)	(3)	.9
	1991	.8	(3)	(3)	.8
	1992	.9	(3)	(3)	.9
Pulpwood (million cords)	1988	97.5	.7	2.8	95.4
	1989	101.2	.7	3.5	98.4
	1990	102.6	.6	4.1	99.1
	1991	103.2	.5	5.1	98.6
	1992	105.1	.6	5.2	100.5

¹ Less than 50 million square feet.

² Includes medium density fiberboard. Imports adjusted to remove estimated waferboard shipments.

³ Less than 50,000 tons.

Note: The projections shown for 1991 and 1992 are based on the trends in the major markets discussed in this paper and should not be viewed as forecasts of actual volumes. Data shown are subject to rounding.

Sources: U.S. Department of Agriculture, Forest Service estimates based on data from the U.S. Department of Commerce, American Hardboard Association, American Paper Institute, American Pulpwood Association, National Forest Products Association, National Particleboard Association, and Western Wood Products Association.

Table 2.--U.S. producer price indexes for selected timber products

(1982=100)

Product	Annual			October	
	1988	1989	1990	1990	1991 ¹
Softwood lumber	120.0	127.1	123.8	117.5	125.6
Hardwood lumber	131.0	128.1	131.0	130.9	128.3
Softwood plywood	109.1	124.2	119.6	108.5	119.0
Hardwood plywood ²	94.2	99.8	102.7	103.4	102.8
Particleboard ³	125.4	128.6	117.3	110.0	119.8
Hardboard ⁴	98.9	98.4	98.5	97.6	97.2

¹ Preliminary.² Hardwood plywood and related products.³ Platen-type (mat-formed), December 1982=100.⁴ Hardboard and fabricated hardboard products, June 1984=100.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

Hardwood lumber prices have shown little variation over the past year. The October producer price index--128.3 (1982=100)--was about one percent below the high recorded in January, and two percent below the average for all of 1990. Because of different market structures, prices for hardwood lumber are generally less volatile than those for softwood lumber.

Softwood Plywood

As noted earlier, new housing construction, traditionally the most important softwood plywood market, has remained below year-earlier levels through the first three quarters of 1991. In addition, most of the other construction and nonconstruction markets in which softwood plywood is widely used, such as residential maintenance and repairs and manufacturing, have been relatively weaker than a year earlier. As a result, softwood plywood consumption apparently has declined in 1991. Even with some improvement likely late in the year, consumption in 1991 is expected to drop to about 18.1 billion square feet (3/8-inch basis), 5 percent below the volume used in 1990.

Data for the first 8 months of 1991 show softwood plywood exports close to 20 percent below shipments during the similar period in 1990, with significantly smaller exports to nearly all of our major offshore markets. This downward trend is likely to persist late in the year and the total for 1991 is expected to be about 1.3 billion square feet. Imports are expected to amount to less than 50 million square feet.

With these levels of consumption and trade, softwood plywood production for 1991 is projected to decline to 19.4 billion square feet (3/8-inch basis), 6.3 percent below output in 1990.

For 1992, with the prospective trends in new housing construction, and the relatively slow growth in other markets, total consumption is expected to increase to about 19.0 billion square feet. Exports also should show a small rise, but imports likely will remain about the same volume. As a consequence, production should increase.

Softwood plywood prices, as indicated by the producer price index, have declined 16.7 percent since July. Moreover, the October index--119.0 (1982=100)--indicated prices below the averages for 1989 and 1990. Prices will likely stay relatively soft until the construction markets, particularly housing, rebound.

Hardwood Plywood

Consumption of hardwood plywood in 1991 is expected to be near 2.1 billion square feet (3/8-inch basis), about 9 percent below total use in 1990. Trade data indicate that imports are likely to decline about 17 percent to 1.4 billion square feet. Exports are expected to increase, but remain near 0.2 billion square feet. With these trends in consumption and trade, production for 1991 will total 0.8 billion square feet, slightly under output in 1990.

Much of the hardwood plywood consumed each year is used in residential construction as well as in the manufacturing sector. As a consequence, if these two markets improve in 1992, as discussed earlier, increases in consumption, imports, and production are likely. Exports are expected to remain close to 0.2 billion square feet.

Hardwood plywood prices, as indicated by the producer price index, have been increasing very slowly over the past few years. Although the index for October--102.8 (1982=100)--indicates prices about 9 percent above those in 1988, they are, of course, only 2.8 percent above the average for 1982.

Particleboard and Medium Density Fiberboard

Activity in the major manufacturing markets and shipments data from the National Particleboard Association suggest that combined consumption of particleboard and medium density fiberboard in 1991 will be close to 4.4 billion square feet, 3/4-inch basis, about 8 percent below that used in 1990. Roughly a fifth of total combined consumption is expected to be medium density fiberboard.

Data from the Bureau of the Census and the National Particleboard Association indicate that exports will drop to about 0.3 billion square feet and imports to about 0.2 billion square feet. With these estimates, production would amount to 4.5 billion square feet, about 8 percent under output in 1990.

Trends in the major markets, discussed earlier, suggest likely increases in production and consumption in 1992.

Hardboard and Insulation Board

Based on industry shipments through the first 8 months of the year, hardboard production in 1991 is estimated at 1.5 million short tons, down about 7 percent from production in 1990. Data from the Bureau of the Census indicate that imports are likely to total 0.2 million short tons. Consumption with these estimates of production and trade, would also amount to 1.5 million short tons, 6.2 percent below 1990 output.

Markets during the first 3 quarters of 1991 indicate that insulation board consumption for the year will be near 0.8 million short tons--about the same volume as was used in 1990. Imports and exports are likely to be less than 50,000 short tons. Consequently, production is estimated at 0.8 million short tons, about the same as output in 1990.

With the prospective trends in housing and the major manufacturing markets discussed earlier, consumption and production of hardboard and insulation board are likely to show small increases in 1992. Imports and exports for both products will probably remain about the same as in 1991.

Pulpwood

Over the first 3 quarters of 1991, U.S. demand for paper and paperboard has been about 2.4 percent below consumption during the similar period in 1990, according to data from the American Paper Institute. Production, on the other hand, was up by about 0.5 percent because of a relatively large increase in exports, coupled with a decline in imports. As a result of the increased paper and paperboard production, and a nearly 9 percent rise in wood pulp exports, consumption of fibrous raw materials for its manufacture grew. In line with recent trends, however, the rate of waste paper usage rose slightly faster than that for wood pulp consumption, and according to data from the American Pulpwood Association, pulpwood consumption showed a small decline. If overall economic activity increases slowly in the last quarter, these various trends are likely to continue, and it is likely that pulpwood consumption (roundwood and chips) in 1991 will total about 98.6 million cords down 0.5 percent from the record high consumption recorded in 1990.

Imports of pulpwood, mostly pulpwood chips from Canada, have declined from year-earlier levels through the first 8 months of 1991, according to Bureau of the Census data. As a result, imports for the year are expected to total 0.5 million cords. Exports are estimated at 5.1 million cords, about 25 percent above exports in 1990.

Pulpwood production in 1991 is expected to rise to about 103.2 million cords, 0.5 percent more than in 1990, and a record level. The prospective trends in overall economic activity suggests that the upward trend will continue in 1992.

Softwood Log Trade

Softwood log exports during the first 8 months of 1991 were down about 12 percent from shipments during the same period in 1990. Exports to several countries were below year-earlier volumes, however, the largest decline--22.6 percent--was in shipments to Japan, the major offshore market for U.S. softwood logs. As the result of some probable continued slowing late in the year, exports for all of 1991 have been estimated at 3.5 billion board feet, about 15 percent below total shipments in 1990. Industry sources indicate that the outlook for 1992 is for a continued decline to about 3.2 billion board feet.

The prospective declines in 1991 and 1992 are based primarily on estimates of market strength in the principal importing countries. Late in 1990, legislation was enacted that placed a permanent ban on export of softwood logs from lands in the contiguous States west of the 100th meridian managed by Federal agencies. It also prohibited the export of logs from lands in the same area managed by State and other public agencies. The ban is total in States exporting less than 400 million board feet annually, but permits export of 25 percent of State and other public harvest for those exporting 400 million board feet or more. Only the State of Washington currently exports more than 400 million board feet annually. The ultimate effects of these bans on total softwood log exports and on the volumes of logs available for domestic manufacture of timber products are still largely unknown. Moreover, the overall situation is further complicated by other prospective constraints on logging in the Pacific Northwest forests.

Softwood log imports were down sharply through late summer and are likely to total less than 10 million board feet, roughly half the volume imported in 1990.

Hardwood Log Trade

Hardwood log exports for 1991 are estimated at 0.2 billion board feet. Although the volume is relatively small, many of the logs exported in 1991 and in recent years have been high quality oak, walnut, and other species prized in the U.S. and abroad for their use in the manufacture of fine furniture and cabinetry. As a consequence, they constitute one of our most valuable timber products exports on a per unit basis. Hardwood log imports in 1991 are expected to be close to 10 million board feet.

Industrial Roundwood Summary

Given the trends discussed above in the production, trade, and consumption of the various individual products, total consumption of all industrial roundwood products (i.e., all products except fuelwood) in 1991 is expected to be about 15.5 billion cubic feet, 3 percent below the total in 1990. Production, imports, and exports likely will also be below year-earlier levels. Consumption, imports, exports, and production will rebound in 1992 if the major markets follow the trends discussed earlier.

Fuelwood

Studies have shown that in the short run, fuelwood consumption largely is determined by such factors as the prices of alternate fuels and weather conditions during the heating season. Current estimates indicate the rapid growth in the consumption of fuelwood seen in the late 1970's and 1980's slowed as the prices of fossil fuels peaked and then declined. Based on available data, fuelwood consumption in 1991 is estimated at about 37 million cords, very near estimated consumption in 1990.

Much of the wood used for domestic heating and cooking in the United States is cut by the consumers themselves from trees in urban areas, fence rows, dead forest trees, and other sources not normally drawn upon for industrial timber products. Most of that used by forest industries comes from utilization of logging residues and mill byproducts.

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FORESTRY IMPLICATIONS OF WATER QUALITY AND WETLAND LAW

William C. Siegel

Research Project Leader, Law and Economics

Southern Forest Experiment Station

USDA Forest Service

This paper examines the legal and institutional environment that forestry managers and timber operators are working in today with respect to water quality considerations. The federal legislative framework is first reviewed since it forms the basis of the state and local water quality protection programs -- both of a regulatory and non-regulatory nature -- that specifically impact management and operating procedures. The interactions between federal law and the state and local programs are addressed next. How these in turn interact with timber production and harvesting are then examined. The paper concludes with a look at current implications and the future outlook.

The discussion that follows is primarily in terms of nonpoint water pollution control. It will also touch on wetland protection to some extent in terms of the relationship between wetlands and water quality. What is meant by nonpoint source water pollution? Essentially, it is water pollution whose source is not traceable to a particular and constant entry point, and which is usually caused by land management activities emanating from broad geographical areas.

A number of sources of forestry nonpoint pollution have caused concern in recent years (Siegel 1988). The primary cause is sediment runoff from land disturbed by timber harvesting and road construction, and by silvicultural practices such as reforestation site preparation and prescribed burning. Additional sources include logging debris in streams and other water bodies; and runoff from pesticides, herbicides and fertilizers. Change in stream temperature due to loss of shade from timber harvesting has also been perceived to be a problem in some areas.

Federal Law

With this background in mind, the legal framework for forestry-related nonpoint water pollution control will be reviewed. The foundation primarily centers on federal law -- specifically in terms of four major statutes, each of which builds on the others. The first is the 1948 Federal Water Pollution

Control Act (FWPCA), followed by its 1972, 1977 and 1987 amendments. Each will be examined in turn.

Enactment of the 1948 Act, which has been amended numerous times over the years, represents the first water quality protection effort at the federal level. Non-regulatory in nature, its primary thrust was to encourage voluntary education and research efforts by the individual states. The first major amendment to the 1948 Act occurred in 1972; it encompassed the first federal movement to directly improve the nation's water quality. In addition, the 1972 legislation marked the first time that forestry activities were specifically addressed in a federal water statute. It mandates reduction in water pollution from both point and nonpoint sources -- including forestry and logging operations.

Two sections of the 1972 Amendments have direct implications for silvicultural and timber harvesting activities. Section 208 mandates implementation of state efforts, with oversight by the Environmental Protection Agency (EPA), to control nonpoint water pollution. Either voluntary or regulatory means may be used -- or a combination of both. Section 404, the only direct federal wetlands regulatory law, provides that a Corps of Engineers permit is required for certain activities involving dredge and fill in navigable waters and adjacent wetlands. Sections 208 and 404 interact with each other in several ways.

The 1977 FWPCA Amendments also contain a provision of major forestry importance. The legislation specifically exempts two types of forestry activities from the Section 404 permit requirement: (1) "normal" silvicultural operations, and (2) construction and maintenance of forest roads accomplished in accordance with state approved best management practices (BMPs).

The basic definition of a BMP is that it is a practice or combination of practices found to be effective and practical for reducing the amount of pollutants from nonpoint sources to levels compatible with water quality goals. The EPA's more rigid administrative definition reads as follows: "methods, measures or practices selected to meet nonpoint source control needs to include, but not limited to, structural and nonstructural controls, and operation and maintenance procedures (Wilkinson 1987).

Despite the Section 208 mandate, however, Congress believed that nonpoint water pollution was still a problem -- that many states were "dragging their heels" in implementing control programs (Haines, Siegel and Cubbage, 1988). Because of this concern, the 1987 FWPCA Amendments were passed. Section 319 requires the individual states to intensify their efforts to control nonpoint water pollution.

How have the various states responded to Sections 208 and 319, and how have their efforts interacted with forestry and timber harvesting operations? The responses in large measure delineate the water quality regulatory and institutional environment in which the forest products industry, loggers and forest landowners find themselves across the United States today.

State General Water Quality Laws

Each of the 50 states has a general water quality law, most of which are broadly written as general enabling statutes (Figure I). Some, however, do encompass rather specific statutory provisions. The purpose is primarily to set out the state policy of water quality protection and enhancement. Most states have promulgated administrative regulations to accompany the laws. These, too, vary greatly in specificity and detail. The general water quality statutes of 11 states -- five in the northeast, five in the west, and one in the midwest -- make specific reference to forestry operations; the others do not. The latter, however, are broadly enough written so that most can easily be interpreted to apply to forest management and timber harvesting if the state so desires (Cubbage, Siegel and Haines, 1987). Tennessee is the lone exception; its general statute specifically applies only to point pollution.

Although 12 of the general water laws were passed before 1950, most were enacted in the 1960's and 1970's. Virtually all have been amended numerous times. Generally, they have not been very restrictive to date with respect to forestry practices -- even those that make specific reference to forestry operations -- except in isolated instances. In most cases, however, these statutes have the potential to be more stringently invoked with respect to silvicultural and logging activities.

State Approaches to Forestry Nonpoint Pollution

Over and above their general water quality legislation, the individual states have responded to forestry nonpoint problems in various ways. Some have taken a non-regulatory approach; others have turned to formal regulation or quasi-regulation (Figure II). Voluntary BMPs are utilized by 34 states, usually in conjunction with educational programs. Eight states -- five in the west, three in the east -- have formal regulatory programs, often as part of a forest practice regulatory act. Eight states have also taken a quasi-regulatory approach, sometimes termed indirect regulation. An example of this would be the Vermont program which stipulates that timber operators found not to conform to state approved BMPs on a voluntary basis must thereafter apply for a permit.

The South.

All the southern states except Florida have chosen the voluntary BMP approach coupled with educational efforts. Florida utilizes a quasi-regulatory program under its Warren S. Henderson Wetlands Protection Act which indirectly requires the use of approved BMPs in certain situations. Under the most rigorous forestry nonpoint control strategy in the south, Florida water management districts (WMDs) can cite forestry operators for not using approved BMPs -- but only if the operator is under a WMD permit. Many activities do not require a permit.

The Northeast.

Seven northeastern states have established non-regulatory BMP programs. Two (Maine and Vermont) utilize a quasi-regulatory approach and the other three (Massachusetts, New Hampshire and New Jersey) rely on formal regulatory legislation.

The Midwest.

Ten of the 12 midwestern states -- including most of those not heavily forested -- use voluntary BMP programs to address forestry non-point pollution. The other two -- Nebraska and Wisconsin -- have quasi-regulatory procedures.

The West.

Five western states -- Arizona, Colorado, New Mexico, Utah and Wyoming -- have voluntary BMP programs. Three -- Alaska, Hawaii, and Montana -- utilize quasi-regulatory approaches. The remaining five -- California, Idaho, Arizona, Washington and Nevada -- rely on formal regulatory provisions incorporated in their state forest practice acts.

Limited Basis Water Related Laws

Many states have enacted various types of water-related laws applicable to forestry operations on a limited basis. These statutes generally apply only to certain geographical areas or to specific types of activities. Some limited regulation under this type of legislation does therefore exist, even in states that have adopted a general non-regulatory approach to forestry-related water quality problems. The number of such laws in a particular state range from none in New Mexico and Oklahoma to eight each in New Jersey and Wisconsin. Twenty states each have four or more such statutes.

Limited basis legislation can be divided into eight major categories. All 19 states with marine coastlines have marine coastal protection laws that impact forestry operations within the designated coastlines. Twelve states have enacted 21 inland and/or water body protection statutes -- nine have two laws each (Figure III). Seven of the 12 states are in the northeast. Stream obstruction laws are found in 21 states -- some in each area of the country (Figure IV).

Wild and/or scenic river laws exist in 19 states (Figure V). These statutes control timber harvesting and silvicultural activities in designated river corridors. The 18 states include some in all areas of the country. Soil and sedimentation control laws have been enacted in 12 states -- five in the northeast, four in the midwest, and three in the west. Under this type of legislation, permits may be required for forestry operations that will disturb more than a designated amount of soil. Application of such statutes to forestry activities has to date generally been limited to the northeast.

Six states have water quality protection laws that apply to silvicultural and harvesting operations only in specific sensitive geographical areas such as the New Jersey Pine Barrens. Eight states have enacted flood plain management statutes and nine have fish and/or wildlife protection laws, all of which relate either directly or indirectly to forestry water quality interactions.

Local Forestry Nonpoint Pollution Ordinances

Local government ordinances that specifically regulate forestry nonpoint pollution have been enacted in six states -- Maine, Connecticut, Pennsylvania, New York, New Jersey and Florida. A total of 67 such ordinances have been identified -- 27 in New Jersey alone. Most have been enacted by townships, but five cities and five counties have also passed this type of law. For example, the Vineland, New Jersey ordinance contains the following provisions:

- (1) logging roads must be constructed so that wetlands and unstable stream banks are avoided.
- (2) a 25 foot buffer must be left along all streams, lakes, ponds and wetlands. Skidding is prohibited in the buffer.
- (3) accessways and landings must be located no less than 100 and 200 feet respectively from ponds, lakes and marshes.
- (4) at the conclusion of operations, all accessways must be closed, bare ground revegetated, and erosion control devices installed.

Conclusions and Future Outlook

To date, most of the 50 states have utilized voluntary BMPs coupled with educational programs to achieve forestry-related water quality goals. Even though legal mechanisms are in place through the general state water quality laws, most states do not currently rely on them to any great degree with respect to forestry operations -- they have not been very restrictive to date. Most special or limited water quality laws have also not been rigidly applied thus far to forestry situations -- with some exceptions.

Nevertheless, the perceived problems associated with nonpoint source water pollution from rural lands -- coupled with wetland protection concerns -- have persisted and grown stronger, whether valid or not. They are now considered by many to be as serious as water pollution from point sources. Thus, there is no question that nonpoint source water pollution prevention and wetland protection will continue to be both a significant national priority and a top priority in most if not all states. As a result, there will most certainly be a continuing effort in most forested states -- and increased efforts in many -- to address such pollution that emanates from silvicultural sources.

How will these efforts interact with the existing institutional and legal framework discussed earlier? Even if voluntary BMPs continue to be the primary

state mechanism -- and indications are that this will be the case in most states -- the general water quality laws loom in the background to be utilized if the voluntary approach doesn't work. This will undoubtedly occur in some states, and with increasing frequency. Flagrant situations will be addressed to begin with, but as time goes on the laws promise to be invoked in less serious instances.

The special situation water quality laws will also be more stringently applied to forestry activities in the next decade -- particularly in the northeast, upper midwest and far west. Local forestry ordinances will continue to proliferate and many, primarily in the northeast, will specifically address forestry water quality considerations.

The bottom line is that forest owners, managers and timber operators will find themselves more rigidly regulated in the years ahead with respect to water quality and wetland concerns. In some areas of the country -- such as the upper midwest and south -- water-related regulation will overshadow traditional regulation of silvicultural practices.

Within this environment, good forestry and timber harvesting operating practices will be a must. Traditional procedures may have to be changed. In many cases there will be substantial increases in operating costs. This means that operational innovations will have to be developed and utilized in order to combat the higher costs.

In some parts of the country, overly-stringent local ordinances will completely shut down commercial forestry operations. In some places this has already occurred.

In summation, water quality considerations will be a major management and planning factor in most forestry situations in the years ahead. In many states water quality will be the paramount factor. The forestry community will have to be prepared to participate in the implementation of the control programs as they are developed and expanded if balance is to be maintained and a reasonable operating environment assured.

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STATE GENERAL WATER QUALITY LAWS

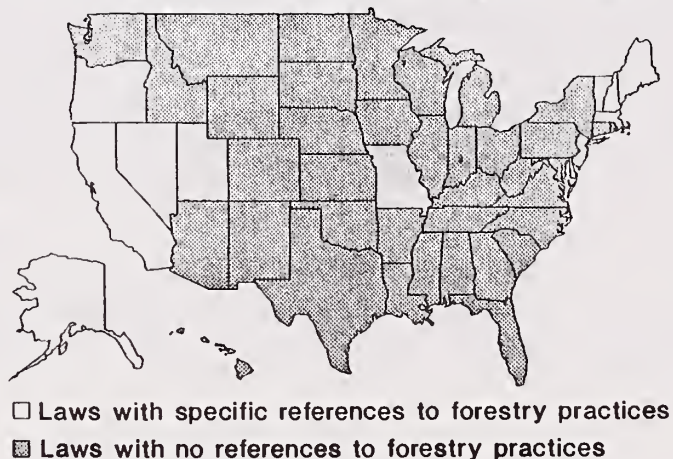


Figure 1

STATE PROGRAMS FOR CONTROLLING FORESTRY NONPOINT POLLUTION

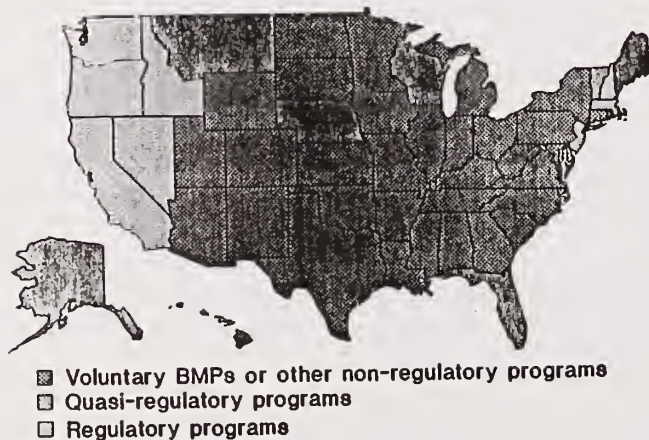


Figure 11

**INLAND WETLAND AND/OR WATER BODY
PROTECTION LAWS**

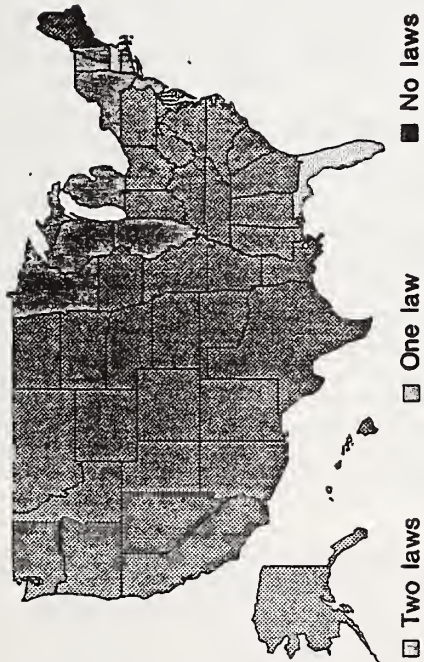


Figure III

WILD AND/OR SCENIC RIVER LAWS

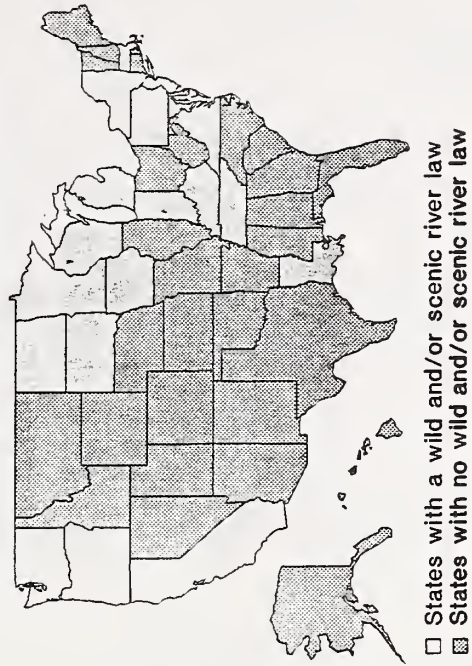


Figure V

STREAM OBSTRUCTION LAWS

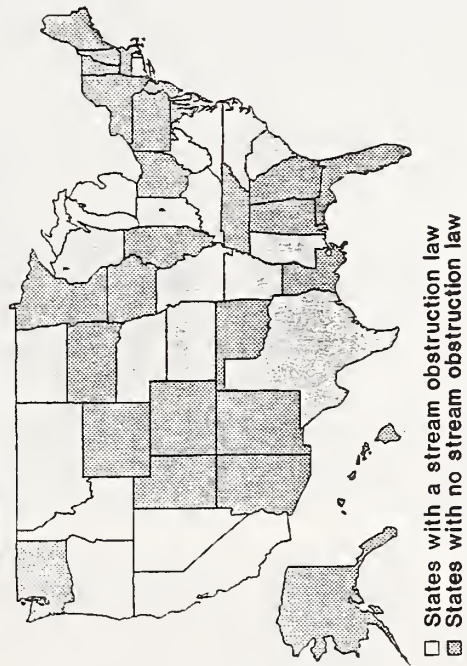


Figure IV



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WASTEPAPER RECYCLING AND THE FUTURE TIMBER MARKET

Peter J. Ince, Research Forester

Joanne T. Alig, Economist

USDA Forest Service

Forest Products Laboratory¹

Madison, Wisconsin, U.S.A.

ABSTRACT

The accelerated recycling of wastepaper in the 1990s will likely have substantial timber market impacts, particularly in the South where more than half the U.S. pulp, paper, and paperboard is produced. Much of the projected increase in wastepaper recycling will occur in unbleached kraft board and newsprint, grades now produced mainly in the South from softwood pulpwood. Thus, recycling will tend to offset future demand growth for softwood pulpwood to a greater extent than that for hardwood, and it will mainly offset demand growth in the South. Recycling will extend softwood timber supplies, leveling market differentials between hardwood and softwood pulpwood, and extending softwood sawtimber supply as well. As a result, there will be increased opportunity for domestic production of paper, paperboard, and other forest products, particularly in the South. In this report, timber market implications are projected into the 21st century, and results are compared with implications of implementing a conservation strategy for the northern spotted owl.

INTRODUCTION

It is timely and appropriate to consider future timber market implications of a significant development that will unfold in the 1990s: acceleration in the rate of U.S. wastepaper recycling. By all accounts, not only will wastepaper recycling accelerate but the use of recycled wastepaper as a fiber input for production of paper and board will continue to grow. With this increase in recycling, pulpwood consumption will grow more slowly than previously anticipated.

The objectives of this report are to present information on likely rates of wastepaper recycling in the late 1990s by product grade and to show the anticipated timber market consequences in terms of regional timber consumption and prices.

In the past 2 years, another issue has been at the forefront of public attention and debate: the economic implications of protecting the northern spotted owl. Like wastepaper recycling, the conservation of this species may have a large influence on future timber markets. A third objective, then,

¹ The Forest Products Laboratory is maintained in cooperation with the University of Wisconsin. This article was written and prepared by U.S. Government employees on official time, and it is therefore in the public domain and not subject to copyright.

is to compare the effects of wastepaper recycling and protecting the northern spotted owl on timber markets.

BACKGROUND AND METHODS

Economic effects on timber markets of implementing a conservation strategy for the northern spotted owl have been projected by the Forest Service and the Bureau of Land Management (USDA FS and USDI BLM 1990). There is much uncertainty about the extent to which wildlife conservation strategies will be implemented in the future. Our analysis, therefore, does not consider the ramifications of all possible land or wildlife conservation strategies or technological developments. Rather, it projects timber market implications into the 21st century and compares results with the implications of implementing a conservation strategy for the northern spotted owl.

The methods used in our study were the same as those employed in the 1989 RPA Assessment of the Forest and Rangeland Situation in the United States (USDA FS 1989). Our results are based on projections developed using the Forest Products Laboratory (FPL) pulp and paper economic model, linked to the Forest Service Timber Assessment Market Model (TAMM). Alternative projections were derived by making appropriate adjustments to technical assumptions or parameters of the models.

Figure 1 compares previous pulpwood consumption projections developed by the Forest Service, including mid-level projections from the 1979 RPA, baseline projections from the Southern study, and baseline projections from the 1989 RPA (USDA FS 1982, 1988, 1989). These projections show that baseline projections of pulpwood consumption have been revised downward relative to the 1979 RPA projections, mainly because baseline projections of paper and paperboard production have been revised. The projections of paper and board production in the Southern study and 1989 RPA are more closely in line with recent industry growth expectations. However, baseline projections of wastepaper recycling in all three studies would now be regarded as quite conservative. Baseline projections of recycling in the 1989 RPA were held down to maintain consistency with projections in the Southern study, although the implications of increased recycling were examined (Haynes 1989, USDA FS 1989).

This report was initially presented about a year ago. Results of the analysis, while still in line with recent industry growth projections, are currently being revised. The issue of wastepaper recycling and its projected timber market implications continue to be the subject of RPA Assessment research. A further report on this issue is being developed for the 1993 RPA Assessment using the North American Pulp and Paper (NAPAP) Model developed by the USDA Forest Service.

RECYCLING IN PERSPECTIVE

The recycling issue has been brought home to nearly every American. Within the past few years, each of the 50 states has enacted some form of recycling legislation, and communities across the United States have developed programs for source separation and collection. People in most households now separate plastic bottles, aluminum cans, and bundled newspapers from other trash.

The reports about municipal solid waste (MSW) have become familiar. In the United States, over 160 million tons of MSW are generated each year (Thurner and Ashley 1990). In 1986, according to the Congressional Office of Technology Assessment, only about 10 percent of all MSW was recycled and 10 to 15 percent was incinerated, leaving almost 80 percent or 130 million tons for disposal in landfills.

More than 50 million tons of wastepaper go to landfills or incinerators. However, in 1988, compared to all solid waste materials, paper and paperboard had the highest rate of recovery for recycling—30.7 percent (EPA 1990, API 1990b). In 1989, the recovery rate increased to 32.6 percent. More than 26 million tons of paper consumed in the United States were recovered for domestic recycling or export, and more than 20 million tons were recycled in U.S. paper and paperboard mills. The United States has come a long way, but we still have far to go.

The paper industry recognizes the value of recycling and has become a leader in this area. In a major commitment to recycling, the industry announced its national goal of 40 percent wastepaper recovery for recycling by 1995 (API 1990a). The recovery of wastepaper has in fact been increasing, as reflected by sustained low prices for certain wastepaper commodities.

Legislative Activity

Much of the supply of wastepaper raw material can be attributed to a flurry of national and state legislative activity. At the Federal level, the Environmental Protection Agency (EPA) has passed a number of regulations affecting wastepaper recycling. In September 1991, they established regulations restricting the location, design, and operations of all municipal landfills, making the disposal of materials in landfills more difficult (EPA, Subtitle D). The EPA has also passed guidelines for Federal procurement of paper and paper products, setting minimum content standards for the purchase of these products by Federal agencies (EPA 1988). Finally, the EPA has established guidelines for State recycling programs, which include specific recycling goals.

At the State level, legislators across the nation are looking at nearly 1,000 recycling bills. On the supply side, most State legislative initiatives continue to be aimed at planning requirements for municipalities, waste reduction goals, and mandatory source separation (NSWMA 1991). On the demand side, legislation continues to focus on recycled content standards; 10 states have mandated recycled content for newspapers (Raymond 1991). Landfill bans and procurement policies for State agencies are also popular legislative initiatives. In addition, by 1990, 40 states had offered grants and loans, tax incentives, or other financial assistance to manufacturers who develop technology for utilizing recovered materials in processing and who develop markets for end use of recovered material (NSWMA 1991).

With a steady supply of wastepaper raw material and legislation requiring manufacturers to use recycled materials, the total amount of wastepaper used for recycling has increased steadily in recent decades. This has not always been the case. In fact, the wastepaper consumption rate per ton of paper and paperboard actually declined after the World War II era and began to rise only in the mid-70s (Fig. 2). Therefore, until recently, it was reasonable to assume that the wastepaper consumption rate would increase only gradually in the decades ahead, as shown in the "Base" projections for the 1989 RPA Assessment. In those projections, the wastepaper consumption rate was projected to increase in the 21st century, but it was not projected to accelerate in the 1990s. Until recently, this was the sort of projection included in most long-range analyses of the timber situation, including a major study of long-range timber trends in the South, known as the Southern Study.

Wastepaper Recovery and Utilization

The likely acceleration in wastepaper recycling can be better visualized by examining paper and paperboard production figures along with wastepaper utilization rates for selected product grades (Table 1). The utilization rate is a measure of how much recyclable paper is actually used in U.S. paper and board mills in relation to paper and board production. In 1988, the utilization rate was

Table 1—U.S. paper and board production and
wastepaper utilization rates

Product grade	Production (millions of tons) [utilization rate (percent)]		
	1988 (Actual)	1995 (Franklin) ^a	2000 (RF-90)
Newsprint	6.0 [24]	7.4 [37]	6.8 [45]
Printing and writing	21.8 [7]	28.8 [7]	31.8 [8.9]
Tissue and sanitary	5.5 [46]	6.4 [49]	6.9 [50]
Packaging and industrial	5.0 [5]	4.8 [5]	4.8 [6.1]
Unbleached kraft board	19.1 [11]	22.0 [20]	24.2 [20.4]
Semichemical board	5.7 [33]	6.4 [41]	7.4 [43.8]
Bleached board	4.5 [0]	4.8 [0]	4.6 [0]
Recycled board	8.8 [100+]	11.0 [100+]	9.8 [100+]
All grades ^b	76.4 [25]	91.7 [30]	96.3 [30.9]

^aFranklin Associates (1990).

^bExcluding construction paper and board.

25.2 percent; in 1989, 26.4 percent (API 1990b). According to FPL projections, if the industry wastepaper recovery goal is achieved by 1995, the utilization rate for wastepaper will be around 31 percent by 2000.

Table 1 lists actual data for 1988 (API 1989) and projections for 1995 and 2000. The projections for 1995 were developed by Franklin Associates (1990), in a report released by the American Paper Institute. The projections for 2000 were developed using the FPL pulp and paper economic model, in a scenario called the Recycling Future 1990 Analysis (RF-90). The Recycling Future scenario was designed to simulate the long-term consequences of technological developments in the 1990s. In this scenario, paper and board production was projected to increase to 96 million tons by 2000, when the average utilization rate in U.S. mills (excluding construction paper and board products) will be around 31 percent (projections derived by FPL pulp and paper model).

More significantly, in terms of timber markets, the projected increases in recycling are concentrated in product grades such as unbleached kraft board and newsprint, where wastepaper utilization rates will nearly double by the end of the decade (Table 1). In the United States, these trends are particularly significant because those product grades are currently produced mainly from softwood pulpwood and primarily in the South from southern pine. At the same time, we know that timber management and timber growth will yield larger softwood timber volumes in the future, as extensive timber planting programs are currently underway in the South and as that timber matures in the early part of the next century.

PROJECTED IMPACTS ON PULPWOOD MARKETS

The Recycling Future scenario provides a stark contrast to the previous RPA Base projections of several years ago. First, in terms of the U.S. wastepaper utilization rate, we are now looking at a future in which we are likely to reach a 31-percent utilization rate in the 1990s (Fig. 3). Beyond that, we project a 40-percent utilization rate by the year 2020 and a 45-percent rate by 2040. Al-

though a future utilization rate of 45 percent may seem extraordinarily high by current U.S. standards, this rate has been achieved in Japan and West Germany.

Such an acceleration in wastepaper utilization will have a substantial impact on pulpwood markets (Fig. 4). In contrast to the RPA Base case, in the Recycling Future scenario pulpwood prices will be stabilized in the South for decades to come. In other words, in contrast to the rising pulpwood prices that had been projected, the future now promises timber growth that more nearly matches the growing demand for pulpwood. This will result in stable price projections. In addition, as hardwood pulpwood approaches 40 percent of pulpwood consumption in the 21st century, hardwood pulpwood prices will approach equivalency with softwood prices. After 2000, hardwood and softwood pulpwood prices will move outward in tandem as they became economic substitutes with the increase in recycled fiber utilization.

As pulpwood prices are stabilized over the long term and as the North American industry relies more heavily on recycled fiber, the combined effect will be a substantial increase in fiber supply. The comparative advantage of the U.S. industry in world markets will be substantially enhanced as a result of extended fiber supply and other infrastructure advantages. As a result, U.S. paper and board production is projected to be substantially higher in the Recycling Future scenario relative to the Base case, while imports will be somewhat lower (Fig. 5). In the Recycling Future scenario, U.S. paper and board production will increase 5 percent by 2000 and 15 percent by 2030 relative to the Base case. This is a very interesting result because it indicates that accelerated recycling will actually increase the long-term growth potential of the U.S. industry, by expanding fiber resources in terms of both pulpwood and recycled fiber.

Although paper and paperboard production will increase, the Recycling Future analysis results nevertheless in reduced growth in pulpwood consumption (Fig. 6). Pulpwood consumption will continue to grow in the future, but pulpwood consumption will grow more slowly. Although pulpwood consumption climbed from around 90 million cords in 1986 to over 97 million cords in 1989, the consumption trend will not continue at the same pace in the 21st century. In the Recycling Future scenario, pulpwood consumption will be 20 million cords lower by the year 2040 than in the Base case.

IMPACTS ON SAWTIMBER MARKETS

Reduced pulpwood consumption in the decades ahead will extend timber supplies, particularly for softwood timber. Therefore, in addition to pulpwood markets, we examined how recycling will impact sawtimber markets. We considered a set of three scenarios, placing the impact of recycling in the context of the northern spotted owl issue. Two scenarios were obtained from the recent Forest Service-Bureau of Land Management (FS-BLM) study of the economic effects of implementing a conservation strategy for the northern spotted owl (USDA FS and USDI BLM 1990). Those scenarios were the Base scenario (similar to the 1989 RPA Base) and the Owls scenario, which was designed to simulate the impacts of a major conservation strategy for the northern spotted owl and related forest plans in the U.S. Pacific Northwest and Pacific Southwest regions (previously denoted as Plans + Owls scenario in the FS-BLM report). The Owls scenario assumed a substantial reduction in allowable sale quantities for timber on the National Forests in those regions. Both the Base and the Owls scenarios assumed no acceleration in wastepaper recycling in the 1990s.

To introduce the impacts of accelerated recycling, a third scenario was developed. This scenario was identical to the Owls scenario except that it also included the projected pulpwood consumption levels derived in the Recycling Future scenario. This Owls + Recycling Future scenario incorporated a substantial projected reduction in timber sales in the West, plus reduced growth in pulpwood consumption associated with accelerated wastepaper recycling.

Figure 7 shows projected softwood sawtimber stumpage prices for the U.S. Pacific Northwest as derived in the alternate scenarios, using TAMM. (Projections were run under the supervision of Professor Darius Adams of the University of Washington, Seattle, and Richard Haynes of the Pacific Northwest Forest Experiment Station, Portland, Oregon.) As reported previously (USDA FS and USDI BLM 1990), the Owls scenario (Plans + Owls) resulted in a substantial rise in projected sawtimber stumpage prices with severe consequences for the timber industry in the Pacific Northwest. Sawtimber was projected to become much more economically scarce relative to the Base projection, resulting in higher projected prices, lower timber product output, and corresponding unemployment and loss of revenues in the timber industry. When the Recycling Future was added to the Owls scenario, projected sawtimber prices did not return to Base levels until sometime after 2010, but prices then dropped below the Base projections. Thus, in the Pacific Northwest, the severe near-term timber market impacts of implementing a conservation strategy for the northern spotted owl are unlikely to be avoided by accelerated recycling. Over the longer term (beyond 2010), however, some timber market impacts could be reversed as recycling will gradually extend sawtimber supplies in that region.

In contrast, the projected impact of recycling on sawtimber markets in the South is much more profound and immediate. Implementation of the spotted owl conservation strategy and forest plans designed to preserve old growth timber in the West was projected to cause a nationwide shortage of softwood sawtimber. This included the impact of increased softwood sawtimber prices in the South (Fig. 8). The timber industry will move from the West to the South, and it will place increased demands on softwood sawtimber in the South. However, when the Recycling Future was factored into the analysis, it largely cancelled out the softwood sawtimber shortage in the South as early as 2000, and afterwards it resulted in a projected stabilization of sawtimber stumpage prices. Accelerated wastepaper recycling will have the greatest timber market impact in the South because of more rapid timber growth rates and greater potential for substitution of mature pulpwood for sawtimber. Also, as we have noted, much of the projected increase in wastepaper recycling will occur in product grades produced mainly from softwood pulpwood and mainly in the South (such as unbleached kraft board and newsprint). Thus, accelerated wastepaper recycling will largely offset the growth in pulpwood consumption (primarily softwood pulpwood) that would otherwise have occurred in the South.

Also, as reported previously, the projected impacts of implementing a conservation strategy for the northern spotted owl included a reduction in U.S. softwood lumber production (because of increased scarcity of softwood sawtimber) and an increase in softwood lumber imports. The addition of the Recycling Future to the Owls scenario had little near-term impact on projected lumber production and imports to the year 2000 (Fig. 9). However, after 2010, the impact of the owl will be reversed and projected U.S. lumber production will increase to levels above the Base case. Also, projected lumber imports will decline as a result of increased domestic supplies of softwood sawtimber.

CONCLUSIONS

Wastepaper recycling will continue to grow in the 1990s, largely as a result of legislative developments favoring recycled products. Accelerated wastepaper recycling will have many important implications for future U.S. timber markets. Accelerated recycling will result in a smaller projected increase in future pulpwood harvest. This, in turn, will result in a substantial reduction of projected future price increases for pulpwood and softwood sawtimber stumpage. Increased stumpage prices associated with preservation of habitat for some endangered species, such as the northern spotted owl, will tend to be offset in the long run. However, this offset may not avoid near-term impacts on timber supply, prices, and employment in the Pacific Northwest. In the South, accel-

erated wastepaper recycling will cause prices for delivered softwood and hardwood pulpwood to approach equivalency by around 2000. Accelerated wastepaper recycling will offset future demand growth for softwood pulpwood more than growth for hardwood, and it will mainly offset demand growth in the South. Delivered pulpwood and sawtimber stumpage markets could be stabilized in the South for decades to come as a result of accelerated recycling and projected growth rates for timber in the South. As a result, there will be increased opportunity for domestic production of paper, paperboard, and other forest products, particularly in the South.

ACKNOWLEDGMENTS

We acknowledge the assistance of Irene Durbak and James L. Howard of the Forest Products Laboratory, Professor Darius Adams of the University of Washington in Seattle, and Richard W. Haynes of the Pacific Northwest Experiment Station in Portland, Oregon.

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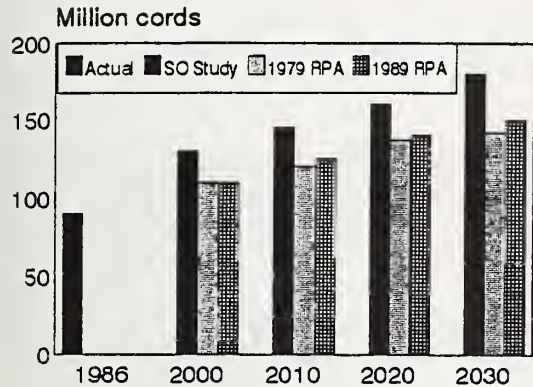


Figure 1—U.S. pulpwood consumption.

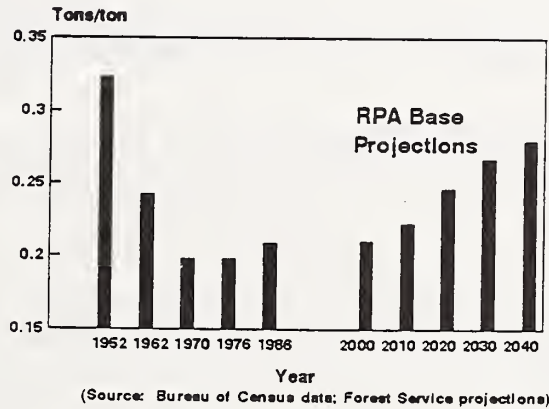


Figure 2—Wastepaper consumed per ton of paper and board produced in the United States (source: Bureau of the Census).

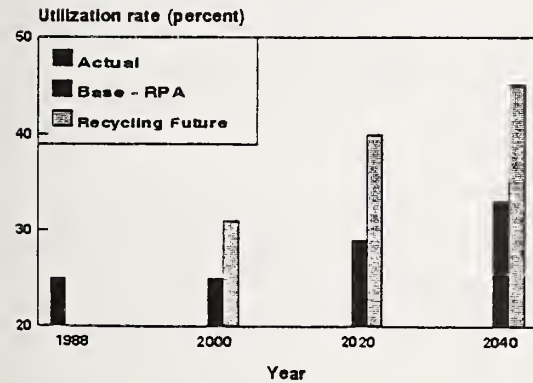


Figure 3—U.S. wastepaper utilization rates, alternate projections.

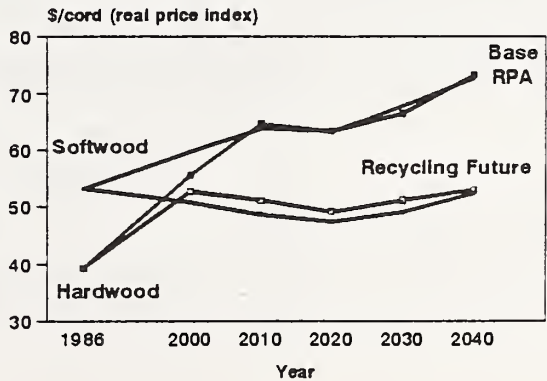


Figure 4—Delivered pulpwood market in the South, alternate projections.

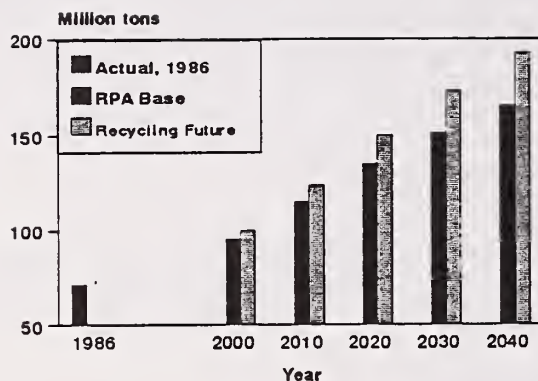


Figure 5—U.S. paper and board production, alternate projections.

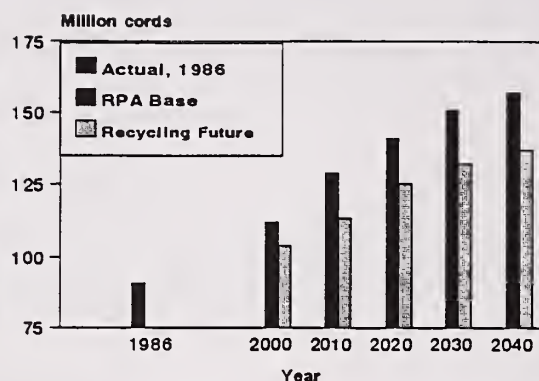


Figure 6—U.S. pulpwood consumption, alternate projections.

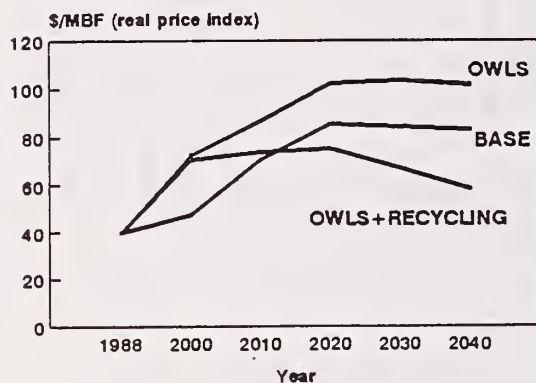


Figure 7—Pacific Northwest sawtimber stumpage market, alternate projections.

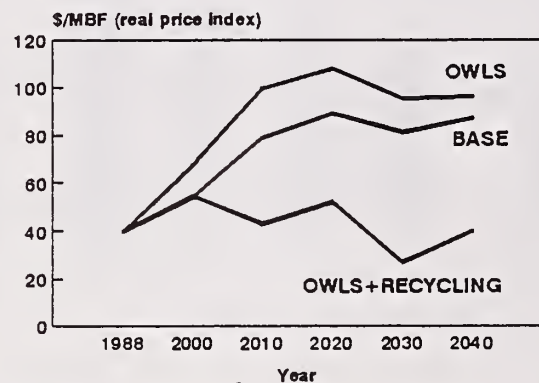


Figure 8—Southern softwood sawtimber stumpage market, alternate projections.

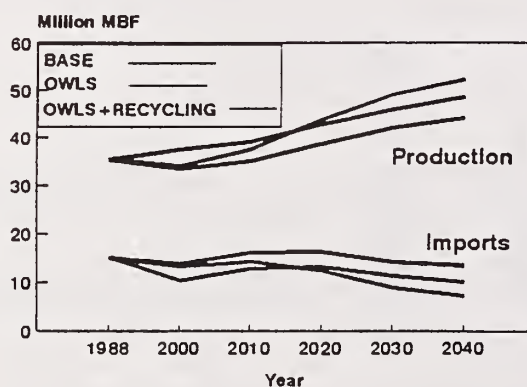


Figure 9—Softwood lumber production and imports.



Outlook '92

For Release: Tuesday, December 3, 1991

THE CHANGING OUTLOOK FOR FEED GRAIN TRADE

**Allen Terhaar
Executive Director
U.S. Feed Grains Council**

It is indeed a pleasure to address you today and to take part in this distinguished panel. The last time I spoke to a USDA Ag Outlook Conference was in November 1982. Much has changed since then, and other things remain very much the same.

Let me recite my opening comments from that speech in 1982: "For the second consecutive year, world feed grain production significantly exceeds consumption. The resulting buildup in ending stocks is expected to leave 1982/82 world stocks 26 percent above the 1981/82 level and 75 percent above the level of two years ago. Stock buildup in the United States has been particularly sharp, with this country forecast to hold three times the amount of feed grain stocks at the end of this year as it did in 1980/81."

Thankfully, we are not currently facing the rapid stock buildup problem that I described in those comments. However, there are other sentences that have a familiar ring: "Imports in key importing areas such as Eastern Europe and Mexico are likely to be held below potential because of financial constraints. Imports by the USSR are expected to remain high, but could fall several million tons..." Other than people nowadays asking what the "USSR" means, the remainder of those sentences is applicable.

To give you a feel for the changing outlook for feed grains trade I am going to go contrary to what every economist is taught; that they should never reveal their previous forecasts. Instead of heeding those wise words, I am going to compare the U.S. Feed Grains Council's 10-year forecast from 1988 with the current situation. In the process I will focus on a few major importing countries, some major competitors and several significant issues facing the supply and demand outlook.

Mexico was, and still is, a case of unrealized potential. However, the situation is improving rapidly. In 1988 we forecast Mexico to be 6 MMT (million metric tons) of imports by 1990 and 7.5 MMT by 1995.

We may fall slightly short of that forecast, but the Mexican economy is moving and we should not have any problem meeting the longer-term forecast assuming the import licensing and seasonal tariff issues are dealt with through the free trade agreement.

One recent development to keep an eye on is the proposed change in the land tenure system in Mexico. Even two years ago it would have been inconceivable that Mexico would ever change its ejido system, which dates back to that country's revolution. The ejido system is a foundation of its social policy, and has been considered an insurmountable impediment to increased agricultural output from Mexican land. However, a proposal is now moving forward to radically change the ejido system to more of a private land structure, which could have far reaching consequences for the makeup of crop and livestock production.

Egypt is another example of the timetable for the uptrend in feed grain imports needing to be pushed back, but where the potential is still strong for solid growth, particularly since the debt forgiveness resulting from the Gulf war. The emerging private sector in Egypt is another reason to be optimistic about future imports.

To move to the strong economies of Asia, Japan was projected even in 1988 to be on the verge of an import slowdown, but not as dramatic as what actually happened. Certainly the liberalization of beef imports and a flood of other livestock product imports have had a negative impact on feed grain imports. However, an even greater factor has been the Japanese trade policies, including a tariff/quota on imports of corn for industrial processing and layers of regulations and secondary tariffs on grain destined for feed which push the domestic feed prices to two and three times world levels. Changes in those trade policies (or lack of changes) will be indicators of whether we have simply reached a plateau in Japanese imports, or whether we are entering a period of significant decline.

Korea is illustrative of two problems; the emergence of China as a major competitor, and the problem with feed wheat. Overall growth in Korean "feed grain" imports has been close to forecast. The problem for the United States has been the composition of grain going into feed and the U.S. share. Actual Korean imports of U.S. grain for feed is currently an abysmal 21 percent, compared with 91 percent eight years ago.

In Taiwan, fortunately, we continue to maintain a 90 percent plus share of the feed grain import market, which if anything has improved in recent years. The United States is also slowly gaining market share in SouthEast Asia, an expanding market overall.

China is a good example of delayed gratification, that we are still hoping (and fairly confident) will one day materialize. Again, trade policy plays a major role. As with its erstwhile communist counterparts, central government control of import/export decisions is the norm. China, in search of hard currency, is forcing corn out of the north into Korea, Japan and other destinations while maintaining firm control on import volume into the south, where economic growth rates in excess of 20 percent are causing demand to explode. The import controls are less obvious than the export volume, but we estimate unfilled demand in south China to be around 5 MMT, in which case China would only be a slight net exporter of feed grains even today.

The only exception to this scenario on the import side is malting barley. China is currently importing 800,000 tons of barley for malt production, and demand is growing in excess of 100,000 tons per year. We are still bullish that economic and political pressures will eventually force China to open its market to feed grain imports and we will see that country evolve into a major net feed grains import market by the turn of the decade.

Switching to what had been the other socialist leviathan, the Soviet Union, we were actually conservative on our early forecast on import growth. But, who knows the future? Obviously, the Soviet Union or its constituent republics are a key to short and long-term prospects for world grain trade. Feed grains and protein meal are likely to be in greater long-term demand than wheat, but the short term will be nearly totally dependent on the willingness of the West to provide financial assistance. The impact could be tremendous. The cumulative effect of lack of trade credits that would cause the Soviets to fall from the project level to, for example, 5 MMT of feed grain imports would by the end of 1995/96 cause a buildup of 60 MMT (or 2.4 billion bushels) of U.S. stocks. Wheat stocks would face a similar buildup.

Is East Europe the USSR of yesterday and the EC of tomorrow? I ask that question because East Europe has moved from one of the world's largest net importing regions 10 years ago to what many projections show to be a net exporter. At this point there is a slight possibility that the region will continue to be a net importer, but those prospects are certainly dimmed by the fact that the countries with the best prospects for imports -- Romania, Bulgaria, Poland and Yugoslavia -- are all beset by numerous serious financial and political problems that will likely tilt the region toward exports in normal crop years.

Switching to the competitors, there is some good news out there. The best news is that a few competitors -- namely Australia, South Africa and Thailand -- appear to be seriously receding from the feed grains export picture. Of the three, Australia is the only one likely to be maintaining a serious net export position as we move to 1995 and beyond.

Now back to the bad news. Back in 1988 we still seriously underestimated the continuing pace of EC feed grain export growth, just as I hope we are now seriously overestimating that growth for the future. The 1991 projections were made assuming minimal GATT discipline in international trade and minimal CAP reform that would be, in large part, offset by EC member internal measures. It remains to be seen whether these were good assumptions -- they certainly worked in the past.

Current discussions would indicate a slightly more serious CAP reform than previously assumed, but we are certainly far from the conditions that had the EC as the largest world market for feed grains a decade and a half ago. In addition, the stable 2 MMT market for feed grains that had been East Germany now is subsumed into the EC and, as so many other good markets, has vanished behind the CAP. In turn, the EC has continued to gain export market share for both feed grains and feed wheat.

Again a switchback to some generally more positive competitive news. Canada looked to be a more formidable competitor from the perspective of the mid-1980s than it does now, which is a greater reflection of the overall slowdown in world feed grain trade and poor profitability than of lack of productive capacity. GATT reform, or lack thereof, will play a major role in whether this is an accurate forecast of future feed grain exports by Canada, as it will for Australia.

Before concluding with the U.S. Feed Grains Council's forecast for U.S. coarse grains exports, I would like to highlight a few additional issues. The feed wheat issue is not totally new domestically or on the export scene. Where the U.S./E.C. faceoff in export subsidies on wheat shakes out in the Uruguay Round will be a key factor in the future of U.S. and world feed grain trade. Using USDA's figures, you can see the explosion of world wheat trade going for feed since 1985, except for 1989 when stocks suddenly tightened. The 7 MMT USDA figure for 1991 we feel is conservative, with a more accurate estimate of current annual use of traded wheat for feed purposes ranging somewhere in the 8 to 12 MMT annual range.

Non-whole grain trade is another factor to monitor in how trade has developed over the past decade and as an indicator of potential change following a GATT settlement. Here you can see the EC dominance of world malt trade compared with the U.S. and Canada.

Also, trade in corn gluten feed and corn gluten meal exports to the EC are indicative of the price and trade distortions caused by the CAP policy.

At this time corn gluten feed and meal are the only grain related feed ingredients with access to the EC at world market prices, causing strong growth in imports of these products in contrast to the decline in whole grains which face a 100 percent tariff. This is why the United States must remain staunchly, unequivocally against any "rebalancing" of tariffs on corn gluten lest we lose any remaining access to the EC market.

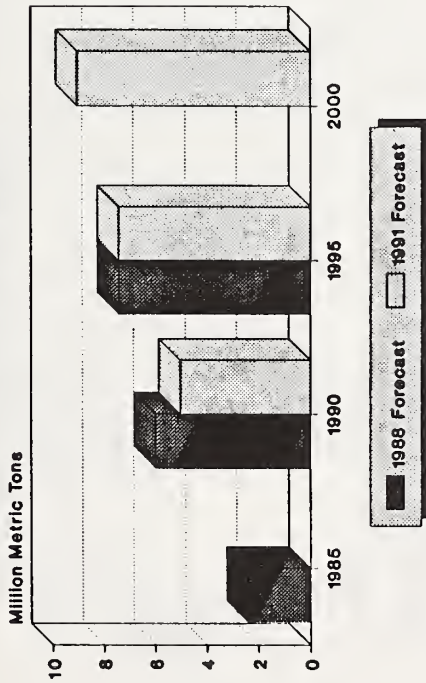
At this point the U.S. feed grain export forecast may seem somewhat anticlimactic. We are off the pace projected in 1988 for growth in feed grain exports, and it looks like the 1991/92 outcome with be further disappointing. However, as we look to the longer term we could have a quite positive outlook for world trade in grains and for U.S. exports of feed grains if we are successful in bringing discipline to the current chaotic world agricultural trading environment. Where that process ends up is anyone's guess at this point, but there is no doubt that it is very important to all of us.

Finally, with the increasingly chaotic international grain market and renewed emphasis on alternative domestic uses, it is important to point out again why exports are key. The very direct relationship between corn prices and exports (the same holds true of sorghum or barley) and the close inverse relationship between corn prices and ending stocks are evident from the following graphs. Ending stocks, of course, are highly influenced by export volume.

The hypothetical question I posed at the conclusion of my remarks to the Ag Outlook Conference in 1982 were the following: "One of the key questions to be answered in each exporting country is whether the current situation of oversupply and depressed prices is best dealt with by limiting production, expanding world consumption or some combination of both".

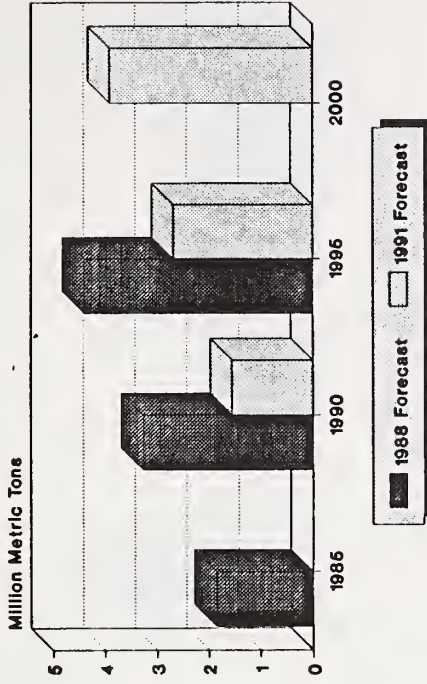
I hope this time we come down squarely on the side of expanding consumption!

Forecast Comparison
Mexico Coarse Grain Imports

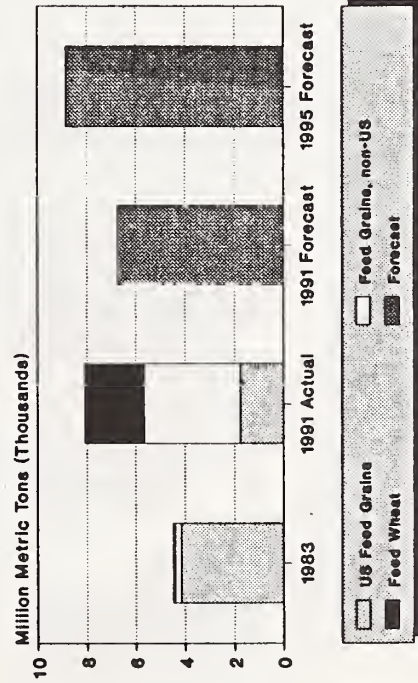


Corn, Barley, Sorghum & Oats

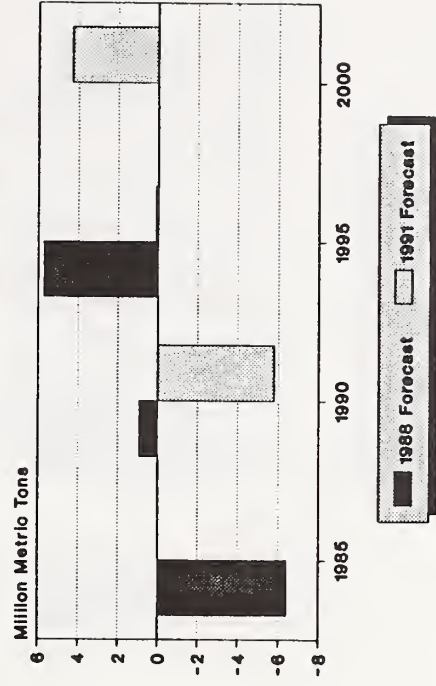
Forecast Comparison
Egypt Coarse Grain Imports



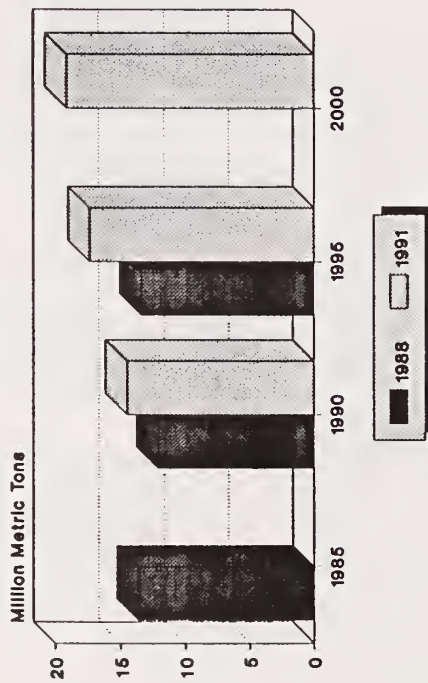
Forecast Comparison
Korea Coarse Grain Imports



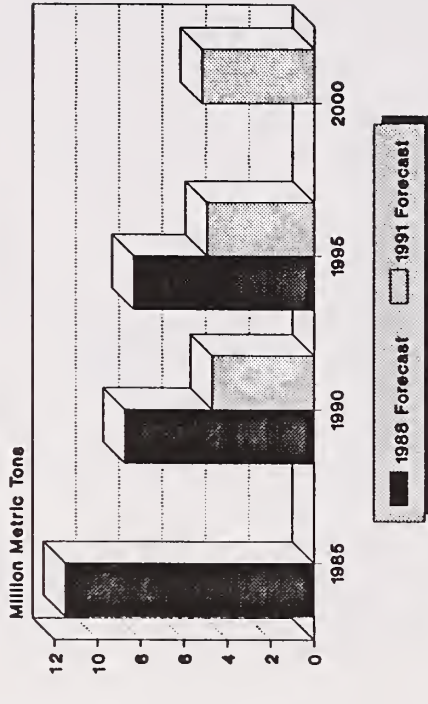
Forecast Comparison
China Coarse Grain Imports



Forecast Comparison USSR Coarse Grain Imports

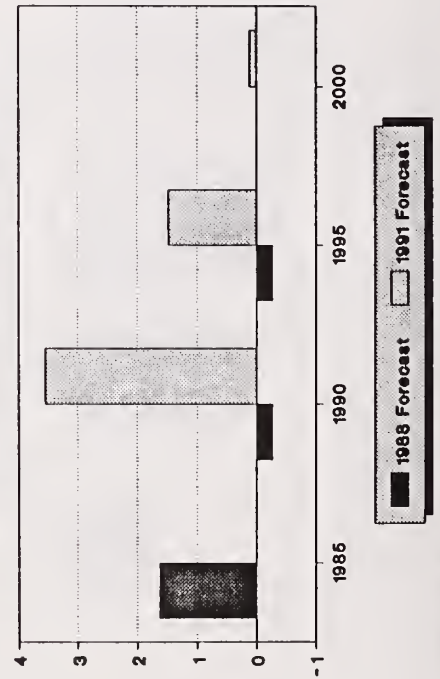


Forecast Comparison Other Competitors



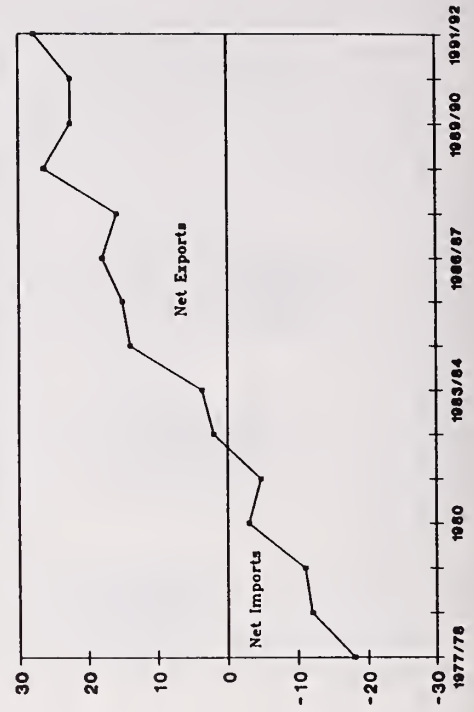
1988/1991 USFBC Demand Model Forecast

Forecast Comparison Eastern Europe* Coarse Grain Imports

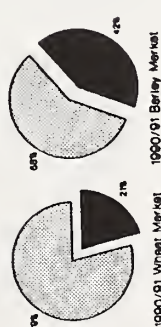
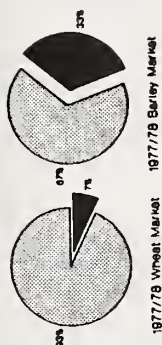


* Excluding East Germany

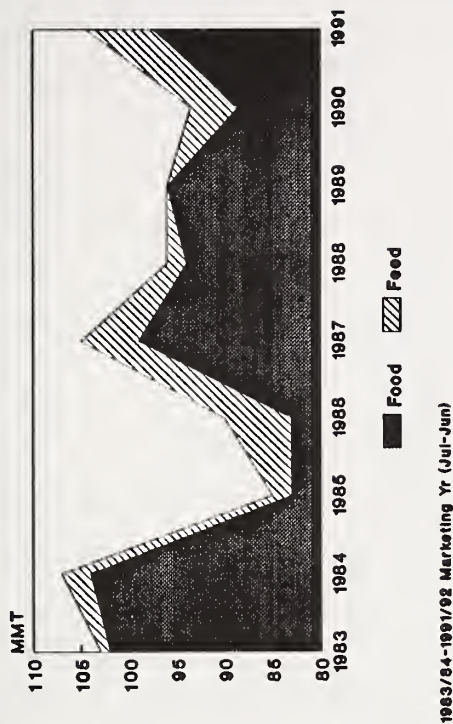
EC NET TRADE IN GRAIN



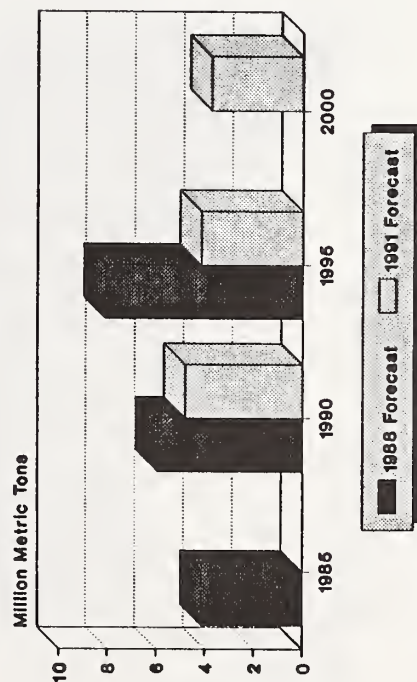
EC SHARE OF WORLD WHEAT/BARLEY MARKETS
1977/78 AND 1990/91



World Wheat Trade Food v. Wheat for Feeding

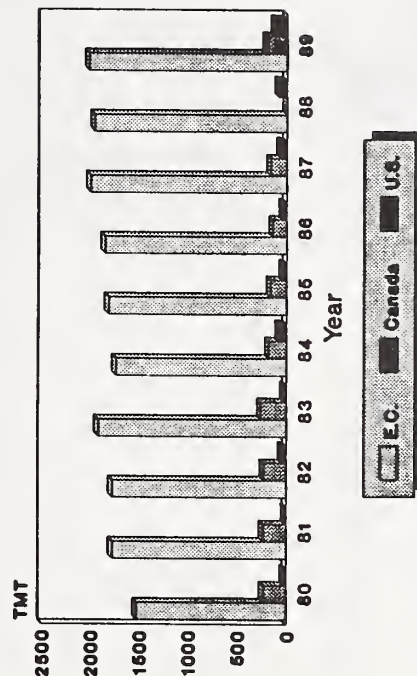


Forecast Comparison Canadian Coarse Grain Exports

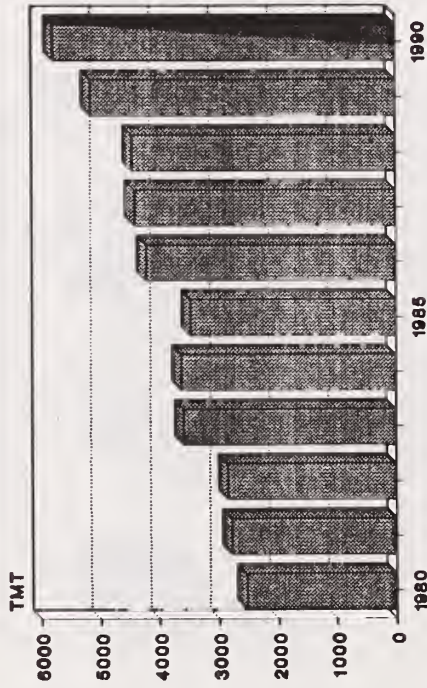


1988/1991 USFGC Demand Model Forecast

MALT EXPORTS 1980-1989

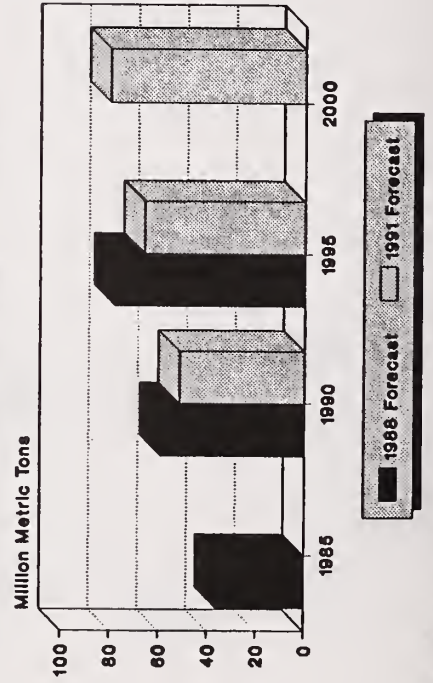


US CGF Exports 1980-1990



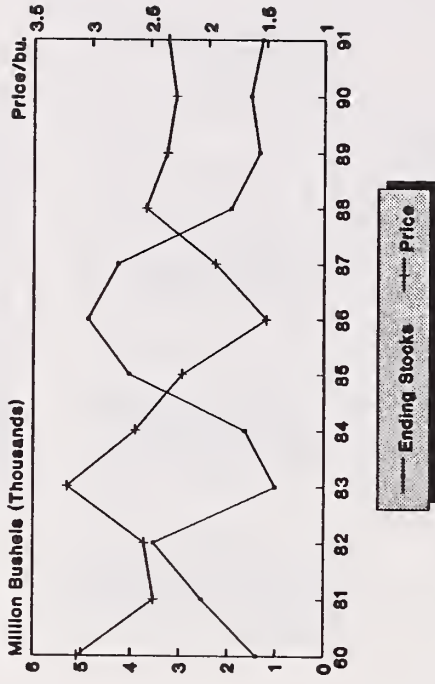
Source: USDA/FAS

Forecast Comparison US Coarse Grain Exports



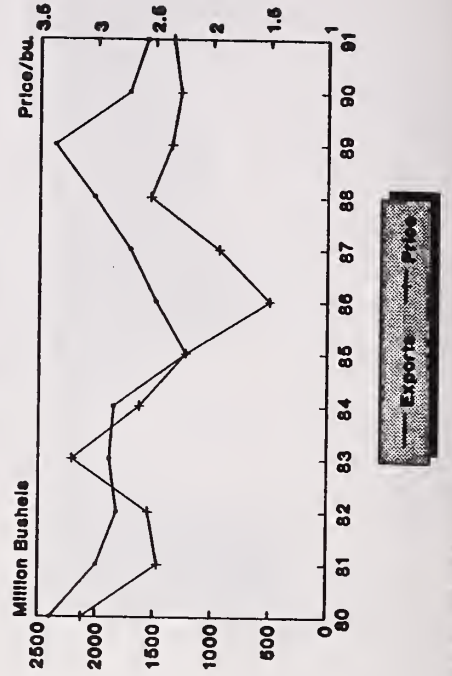
1988/1991 USFQC Demand Model Forecast

Corn Prices v. Ending Stocks 1980/81 - 1991/92



USFQC Demand Model Forecast

Corn Prices v. Exports 1980/81 - 1991/92



USFQC Demand Model Forecast



Outlook '92

Wednesday, December 4, 1991

CONCERNS OF THE GRAIN INDUSTRY

Richard D. Smetana
Senior Commodity Analyst, Continental Grain Co.

I WOULD LIKE TO MAKE FIVE BRIEF COMMENTS ABOUT TODAY'S GRAIN ENVIRONMENT.

MY FIRST POINT CONCERNS THE CURRENT AVAILABLE ACREAGE BASE. THE DEMAND FOR US GRAIN HAS CONTINUED TO GROW. DESPITE THE ROLLER COASTER RIDE WE HAVE HAD IN EXPORTS, THE TOTAL U.S. GRAIN DEMAND TREND IS DEFINITELY UPWARD. NOTE IN THE FIRST SLIDE FOR CORN THAT THE GROWTH RATE IS APPROXIMATELY 2.5 PCT PER ANNUM. INDUSTRIAL DEMAND GROWTH CONTINUES AND, IN FACT, COULD MAKE A SURGE IN THE NEXT FEW YEARS DUE TO THE CLEAN AIR AND HIGHWAY ACTS. DOMESTIC CORN FEEDING ALSO CONTINUES TO EXPAND AS THE ANIMAL BASE INCREASES AND ALTERNATIVE GRAIN SUPPLIES CONTRACT.

WHILE THIS DEMAND BASE EXPANDS, THE DOMESTIC SUPPLY OF WHEAT AND FEED GRAINS IS HELD HOSTAGE TO FINELY TUNED ARP PROGRAM. THE PROBLEM, AS SHOWN IN THE NEXT SLIDE, IS THAT THE LARGE CONSERVATION RESERVE BASE, 36 MILLION ACRES AND GROWING, AND SMALL CARRYOUTS, LIMITS OUR ABILITY TO REACT TO PRODUCTION SHORTFALLS. CORN CARRYOUT STOCKS HAVE DECLINED FOUR OF THE PAST FIVE YEARS AND WE ARE CURRENTLY DANGEROUSLY CLOSE TO MINIMAL PIPELINE SITUATIONS IN ALL THE U.S. FEED GRAINS AND WHEAT. WITH THIS SITUATION ALREADY EVIDENT, THE USDA HAS DECIDED IN SEPTEMBER THAT WE COULD STILL AFFORD TO REMOVE 5 PERCENT OF THE FEED GRAIN ACREAGE WITH A 5 PERCENT ARP. SUCH AN ARP WILL UNDER THE BEST OF CONDITIONS PRODUCE A 8.4 BILBU CORN CROP. UNDER A SEVERE DROUGHT SCENARIO THE CROP COULD BE AS SMALL AS 5.9 BILBU CROP.

POINT:: WITH OUR DECREASING ACREAGE BASE IT WOULD APPEAR THAT AN ABNORMALLY FAVORABLE STRING OF GROWING SEASONS WILL BE NECESSARY TO CONTINUE TO PRESERVE ADEQUATE THOUGH MINIMAL GRAIN CARRYOUTS. OTHERWISE, THE UNITED STATES WILL NOT BE A RELIABLE SUPPLIER OF FEED GRAINS OR WHEAT TO OUR DOMESTIC LIVESTOCK INDUSTRY OR TO THE WORLD.

THE SECOND AREA I WOULD LIKE TO DISCUSS REGARDS THE QUARTERLY STOCKS REPORT AND THE RELATED CONCLUSIONS REGARDING FEEDING. THOSE WHO KNOW ME KNOW THAT THIS IS AN AREA DEAR TO MY HEART. IN THE SEVENTIES (SHOWN IN THE FOLLOWING SLIDE) THERE WAS A REASONABLY GOOD CORRELATION BETWEEN WEIGHTED ANIMAL NUMBERS (GCAU) AND FEED DISAPPEARANCE. BEGINNING IN THE 1982-3 CROP YEARS AND AGAIN DURING THE 1988-89 CROP YEARS THERE HAVE BEEN SHARP DEVIATIONS FROM THE EXPECTED FEEDING TONNAGE AND THE OBSERVED ANIMAL DEMAND BASE. THESE DEVIATIONS HAVE CAUSED TRADING PROBLEMS PARTICULARLY IN THE EXPECTATIONS OF FEED DEMAND AND THE RELIABILITY OF THE STOCKS REPORTS. SUCH WIDE DEVIATIONS WERE ESPECIALLY EVIDENT DURING THE 1988/9 AND 1989/90 SEASONS.

MAYBE THE PROBLEM IS THE CONCEPTION OF WHAT THE STOCKS REPORTS REPRESENT AND WHAT THEY ARE SUPPOSED TO RELATE. ALL NASS OFFICIALS I HAVE SPOKEN WITH HAVE ASSURED ME OF THE STATISTICAL RELIABILITY OF THESE REPORTS, A POINT I DO NOT CONTEST. IT IS MY BELIEF, AND THAT OF OTHERS IN THE INDUSTRY, THAT THE STOCKS REPORTS ARE MEASURING MOVEMENT OFF FARM AND NOT ACTUAL USAGE. THEREFORE, THE RESIDUAL, THAT REMAINING AFTER KNOWN EXPORT AND INDUSTRIAL USAGE, HAS BEEN ATTRIBUTED PREDOMINANTLY TO FEEDING, BUT APPEARS TO BE IN REALITY MOVEMENT OFF THE FARMS TO LOCATIONS NOT READILY ENUMERATED BY NASS GATHERING METHODS. SUCH A PSEUDO DISAPPEARANCE COULD SHOW UP AS STRONG USAGE OF GRAIN IN A PRE-DROUGHT YEAR, BUT AS A WEAK DISAPPEARANCE IN THE FOLLOWING SHORTFALL YEAR, AS THE HIDDEN GRAIN IS FED. THIS DOUBLE YEAR PHENOMENA OCCURRED THREE TIMES DURING THE PAST 11 YEARS.

THIS FEEDING / RESIDUAL COMPONENT OF TOTAL CORN AND FEED GRAIN DISAPPEARANCE IS NOT A MINOR CONCERN. IN RECENT YEARS, IT REPRESENTS AROUND 60 PERCENT OF TOTAL CORN USAGE AND AS MUCH AS 80 PCT OF DOMESTIC CORN DISAPPEARANCE. BUT, THERE IS NO, AND I REPEAT NO, CONFIRMING DATA TO SUPPORT THE FEED DISAPPEARANCE ATTRIBUTABLE IN THESE STOCKS REPORTS. IN WHEAT AND SORGHUM, WE ENCOUNTER THE STATISTICALLY VALID, BUT MIND-BOGGLING, PHENOMENA OF NEGATIVE QUARTERLY FEEDING BECAUSE OF THE METHODOLOGY IN THESE STOCKS REPORTS. THIS IS NOT A CALL TO DROP THE STOCKS REPORTS WHICH WE STILL DESPERATELY NEED.

BUT THE POINT IS: THERE SHOULD BE A SUPPORTIVE QUARTERLY, NASS SURVEY OF THE DOMESTIC FEED DEMAND BY ANIMAL AND GRAIN TYPE INSTEAD OF RELYING ON THE IMPRECISE CURRENT PSEUDO-FEEDING RESIDUAL. THE STOCKS REPORT TENDS TO CLOUD FEEDING ANALYSIS, SINCE IT CAN BE OFF BY AS MUCH AS 15 PCT ANNUALLY. THAT IS 800 MILLION BUSHELS. IT'S ALSO EQUIVALENT TO THE DIFFERENCE BETWEEN A 10 AND A 30 MMT SOVIET IMPORT PROGRAM.

THIRD, I WOULD LIKE TO COMPLIMENT NASS ON THEIR NOVEMBER DETAILED ANALYSIS OF SOYBEAN ROW SPACING AND POD DENSITIES DATA. THE DATA HELP EXPLAIN THE HIGHER THAN EXPECTED YIELDS THIS PAST YEAR.

BUT, A POINT SHOULD BE MADE AS TO TIMING: SUCH EXPLANATIONS SHOULD OCCUR UPON ISSUANCE OF THE 117 MILBU PRODUCTION INCREASE THIS PAST OCTOBER AND THE 81 MILBU INCREASE IN NOVEMBER 1990. THIS IS TO INSURE THAT THE MARKET UNDERSTANDS THE IMPLICATIONS AT THE TIME OF SUCH A DRAMATIC CHANGE. THE DETAILED ANALYSIS IS HELPFUL, BUT UNTIMELY, A MONTH OR A YEAR LATER, FOR THOSE WHO ARE PARTICIPATING IN THE MARKETS DAILY.

FOURTH, THE WATER TORTURE MENAGERIE OF RUMORS, RETRACTIONS AND DELAYS REGARDING SOVIET CREDITS HAVE BEEN EXTREMELY DETRIMENTAL TO THE MARKET. IT IS NOT THE FAULT OF THE USDA/ADMINISTRATION, PARTICULARLY WITH THE UNCERTAINTY OF THE DEBT SERVICE, ECONOMIC AND POLITICAL INSTABILITY OF THE DISSOLVING UNION AND THE REPUBLICS THEMSELVES. IN OTHER WORDS, WHO IS IN CHARGE AND OF WHAT? BUT, THE OVEREMPHASIS ON THE CREDIT AND THE ALLOCATIONS HAVE OVERWHELMED THE BASIC MARKET FUNDAMENTALS. MOST STUDIES OF THE VALUE OF CORN, WHEAT AND BEANS WOULD SUGGEST CURRENT PRICES SHOULD BE AT LEAST TEN PERCENT HIGHER THAN THEY CURRENTLY ARE BASED ON THE FUNDAMENTAL TIGHTNESS OF THEIR RESPECTIVE CARRYOUTS.

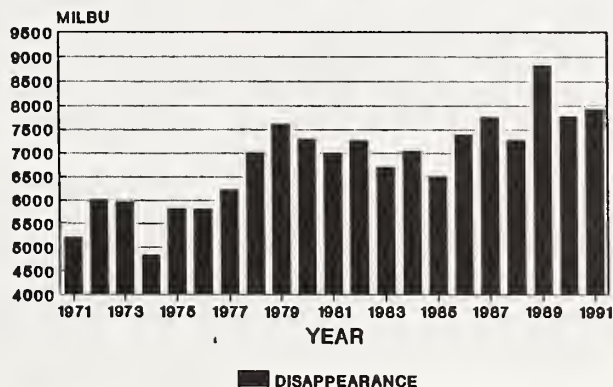
POINT: THE USDA HAS INADVERTENTLY BEGUN TO CONTROL THE CORN MARKET THROUGH GSM CREDIT ALLOCATIONS. IT'S DISTRESSFUL TO WATCH CORN EVOLVE INTO A MARKET LIKE THE WHEAT MARKET, WHICH IS CONTROLLED FROM BIRTH (ARPS) TO FINAL DISAPPEARANCE (EEP ALLOCATED QUANTITIES, DESTINATIONS, PRICES AND DESIGNATED CLASSES VIA THE USDA-FAS WHEAT BOARD). MARKETS THAT AWAIT GOVERNMENT DECISIONS FOR DIRECTION BECOME UNCERTAIN AND ILLIQUID.

FINALLY, WHAT DOES THIS ALL MEAN TO GRAIN MERCHANDIZING ? LET ME PRESENT TWO EXAMPLES OF THE PROBLEMS. WE ARE LOSING OUR EXPORT MARKETS, PARTICULARLY IN LACK OF VOLUME AND CAPACITY UTILIZATION. THIS SLIDE PRESENTS THE RECENT HISTORY OF THE DYING ATLANTIC COAST EXPORT MARKET. SECOND, INTERIOR ELEVATORS ARE BECOMING GHOST STRUCTURES. LOOKING AT THE

ABOVE GRAPH OF DECEMBER 1 STOCKS IN THE U.S. (NOTE DECEMBER 1 IS THE PERIOD JUST AFTER THE FALL HARVEST AND HAS THE HIGHEST STOCKS TO CAPACITY RATIO.) DECEMBER 1, 1991 STOCKS ARE PROJECTED AT 51 PERCENT CAPACITY. THIS PAST JUNE 1 STORAGE WAS FILLED TO JUST 23 PERCENT OF CAPACITY. THERE IS JUST NO INCOME IN GRAIN MERCHANDIZING WITH GROSSLY UNDERUTILIZED FACILITIES AND THIS SITUATION IS REFLECTED BACK TO THE FARM AND FARM SUPPLIERS.

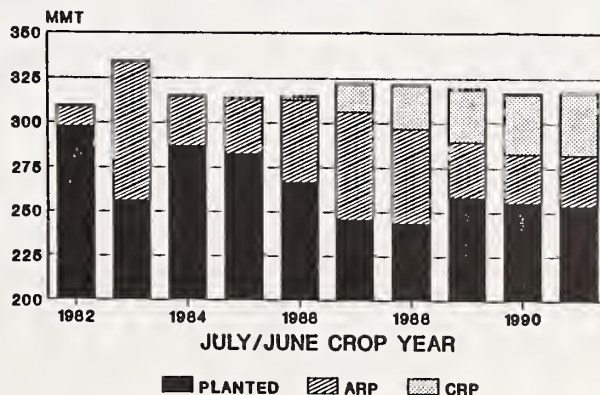
THANK YOU VERY MUCH FOR YOUR TIME.

U.S. CORN DISAPPEARANCE
IN MILLION BUSHELS



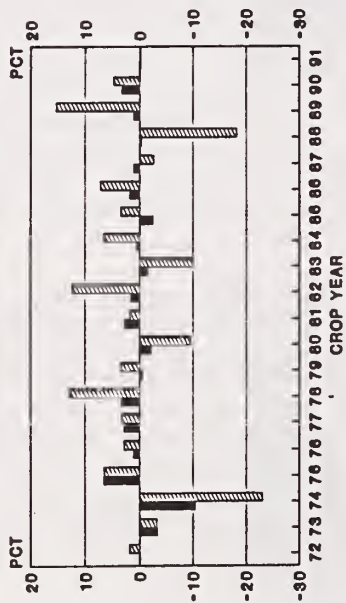
SEPT/AUGUST YEAR

US PROGRAM CROP ACREAGE
IN MILLION ACRES



FEED GRAINS, OILSEEDS, COTTON, FOOD GRAINS

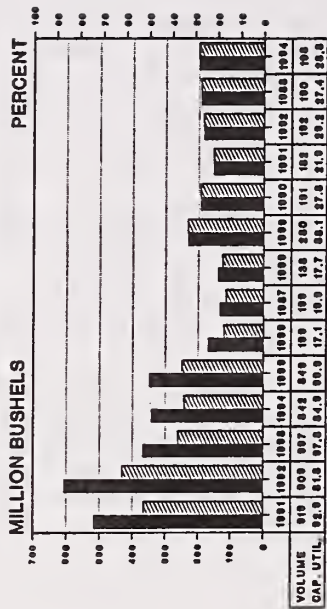
GRAIN FEEDING PCT OF PREVIOUS YR



■ ANIMAL NUMBERS ■ FEEDING

WHEAT, CORN, SORGHUM, OATS AND BARLEY.

ATLANTIC VOLUME AND CAPACITY

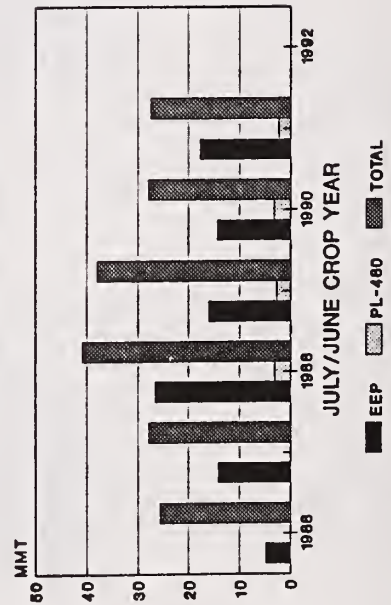


JAN / DEC MARKETING YEAR

■ VOLUME ■ CAP. UTIL.

INCLUDES FEED GRAINS AND SOYBEANS

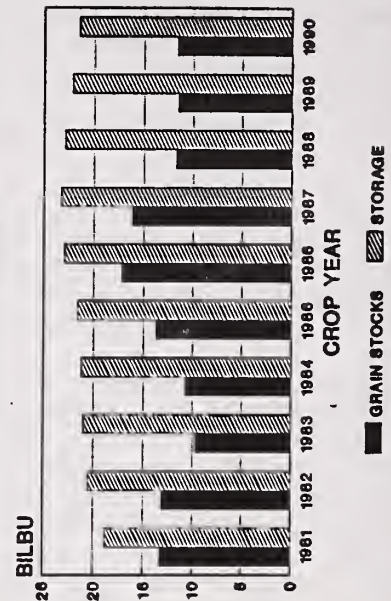
US WHEAT EXPORTS BY FINANCE INSTRUMENT



■ EEP ■ PL-480 ■ TOTAL

IN MILLION METRIC TONS

US DECEMBER 1 STORAGE SITUATION IN BILLION BUSHELS



■ GRAIN STOCKS ■ STORAGE



Outlook '92

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**WORLD GRAIN TRADE PROSPECTS:
AN AUSTRALIAN PERSPECTIVE***

Dr Brian S. Fisher

Executive Director

Australian Bureau of Agricultural and Resource Economics

Australian farm incomes in 1991-92 are likely to be the lowest on record, having fallen to a very low level from their recent peak in 1988-89. This slump is due partly to domestic influences. Widespread drought in eastern Australia is affecting farm production and a large stockpile is overhanging the wool market. However, international influences are also extremely important, particularly the low level of grain, dairy and sugar prices on world markets. The triggering of the US Meat Import Law this year is also aggravating the impact of the drought on the Australian beef industry.

Looking to the future, a return to normal weather patterns is forecast for eastern Australia in 1992. Real interest rates and the exchange rate are likely to decline over the medium term, and the wool stockpile will eventually be reduced to more manageable levels. However, without a significant improvement in world market prices for Australia's major farm commodities, the recovery in farm incomes will be drawn-out and weak. For these reasons developments in world markets are of critical importance to Australian agriculture.

The medium and long term prospects for the world grain trade are characterised by considerable uncertainty, with various political and institutional upheavals adding to the weather induced shocks normally experienced. Recent changes in some of these factors make an assessment of prospects timely. Looking into the future should be more than idle speculation. Planning is necessary to make the most of the expected, and to cope best with the unexpected. A critical examination of current developments will contribute toward better predictions of future trends in the grain trade.

Key factors that will affect the grain market in the decade ahead include the outcome of the Uruguay Round and the associated issues of possible CAP reform and the extent of export subsidisation by the United States and the European Community. Failure to bring about significant trade reform in the Uruguay Round may lead to the formation of trading blocs, posing a further threat to global trade if such trading blocs result in the erection of new trade barriers or the strengthening of existing barriers. Policy changes in China and various issues relating to political and economic developments in Eastern Europe and the region formerly encompassed by

* Paper prepared by David Vanzetti, Neil Andrews, Brett Garner and Brian Fisher. Project 6189.102.

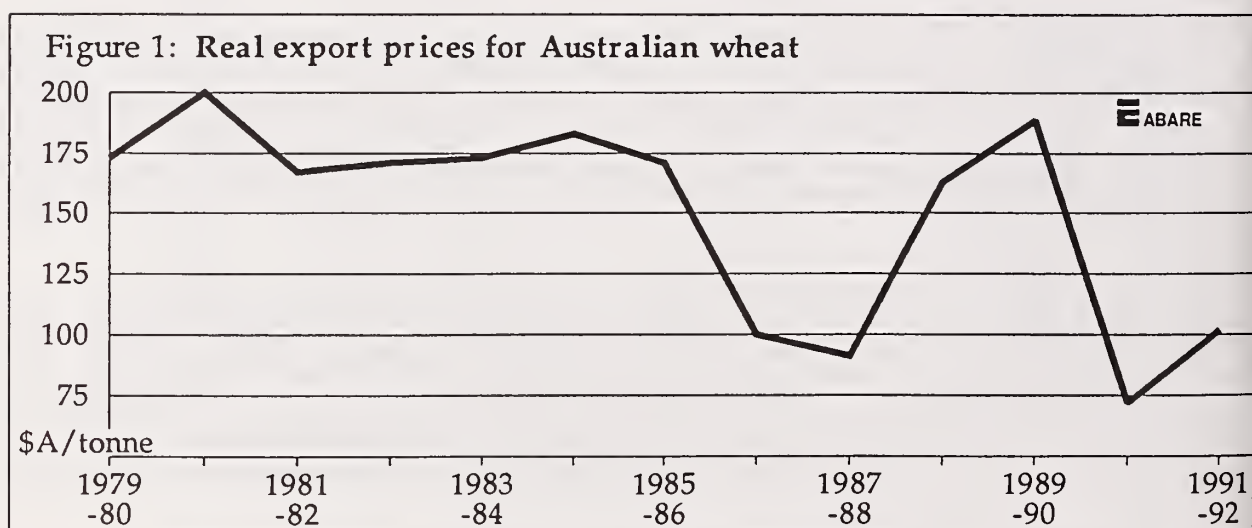
the Soviet Union may also have a dramatic impact on world grain markets. Finally, in the longer term, differing population and economic growth rates between developing and developed countries and dietary changes will change the pattern of trade flows.

Farm incomes in Australia

Australian producers export over three quarters of their wheat and up to half of their production of other grains and hence are influenced markedly by international developments. Such developments have not favoured Australian grain farmers since the mid-1980s. Real export prices for wheat were very low in 1986-87 and 1987-88 and, following a temporary respite in 1988-89 and 1989-90 as a result of the drought in North America, have again fallen dramatically in 1990-91 and 1991-92 (figure 1).

Many Australian farmers have an advantage over their American counterparts in being able to efficiently produce both grain and livestock. Mixed farming enables a switch from one enterprise to another as relative prices change. In the latter half of the 1980s producers adjusted to falling world wheat prices by moving out of wheat and into alternative crops (particularly legumes) and wool. The area sown to wheat declined from just over 11 million hectares in 1986-87 to about 8.8 million hectares in 1988-89, and fell even further to 7.9 million hectares in 1991-92 in response to drought and low prices. Sheep numbers increased from 153 million in 1986-87 to a peak of 174 million in 1989-90 and are forecast to be 147 million in March 1992. Beef cattle numbers have remained at around 23-24 million since 1986.

The sharp rise in sheep numbers in the latter part of the 1980s reflected not only the low wheat prices but also a period of high wool prices. Wool prices rose dramatically in 1987-88, with the average market indicator price for clean wool rising from A655c/kg in 1986-87 to A1050c/kg. This increase was caused by several factors, the most important being increased demand, particularly from China and the Soviet Union. Prices remained artificially high in 1989-90 and 1990-91 as the Australian Wool Corporation bought large quantities of wool to support its minimum reserve price in the face of markedly reduced demand, particularly from China and the Soviet Union, and rapidly increasing wool production. The Minimum Reserve Price Scheme had clearly become unsustainable by the end of 1990, and was suspended in February 1991 and subsequently abandoned in mid-1991. Prices have currently fallen to around half the 1987-88



level. With almost a year's production held in stocks, the market price is forecast to recover only slowly over the next two or three years. With real grain prices also low there is strong downward pressure on farm incomes.

A further factor depressing producer incomes is the current drought in eastern Australia. The combined effect of the drought and the reduced area sown to wheat in 1991-92 in response to low prices is reflected in the estimates of the 1991-92 wheat harvest of only 9.5 million tonnes, compared with 15.1 million tonnes the previous year. In 1991-92 wool production per head is expected to have fallen to a level not experienced since the early 1960s. And increased turnoff of beef in Queensland and northern New South Wales has resulted in exports to the United States reaching the Meat Import Law trigger level, necessitating export restraint in Australia.

The negative impacts on incomes of low prices and poor seasonal conditions have been compounded by macroeconomic conditions. From an Australian farmer's perspective, the key domestic macroeconomic variables are interest rates and the exchange rate. Real interest rates in Australia have declined somewhat from their recent peak in late 1989. For example, real prime rates in Australia are now around 9 per cent compared with almost 13.5 per cent in late 1989. The current level is still considerably higher than in most other developed economies. For example, the real prime rate in the United States is currently around 4 per cent. This substantial real interest rate premium in Australia has been sufficient to give the Australian dollar considerable buoyancy. The present value of the Australian dollar, at around US78c, is little different from its value at the end of 1989, despite a sharp fall in the world prices of many of Australia's major export commodities in the intervening period.

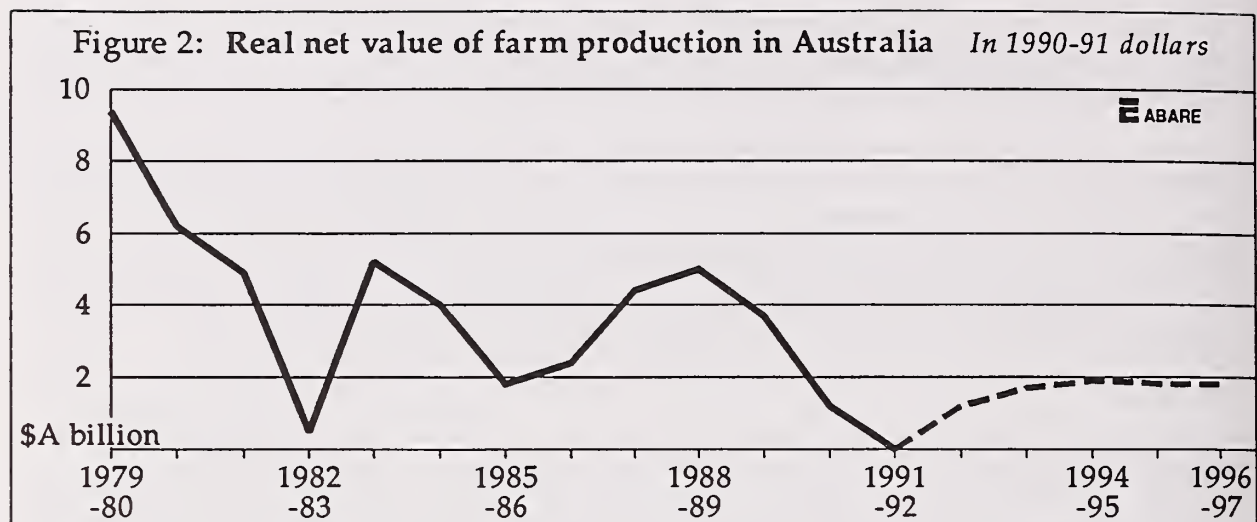
It is, of course, difficult to assess the extent to which the exchange rate has been buoyed by the continuing high real interest rates in Australia. However, ABARE research indicates that, at its present level, the real value of the Australian dollar is perhaps 5 per cent higher than might be sustainable over the medium term. In preparing its medium term outlook assessments, ABARE has assumed that real interest rates in Australia will decline further and that this will be accompanied by a gradual fall of 5 per cent in the real exchange rate, both factors giving a boost to projected farm incomes over the medium term.

The low commodity prices on world markets, drought and high interest and exchange rates in Australia are reflected in the farm income data shown in table 1. Farm cash income is derived

Table 1: Broadacre farm cash incomes Average per farm in nominal dollars

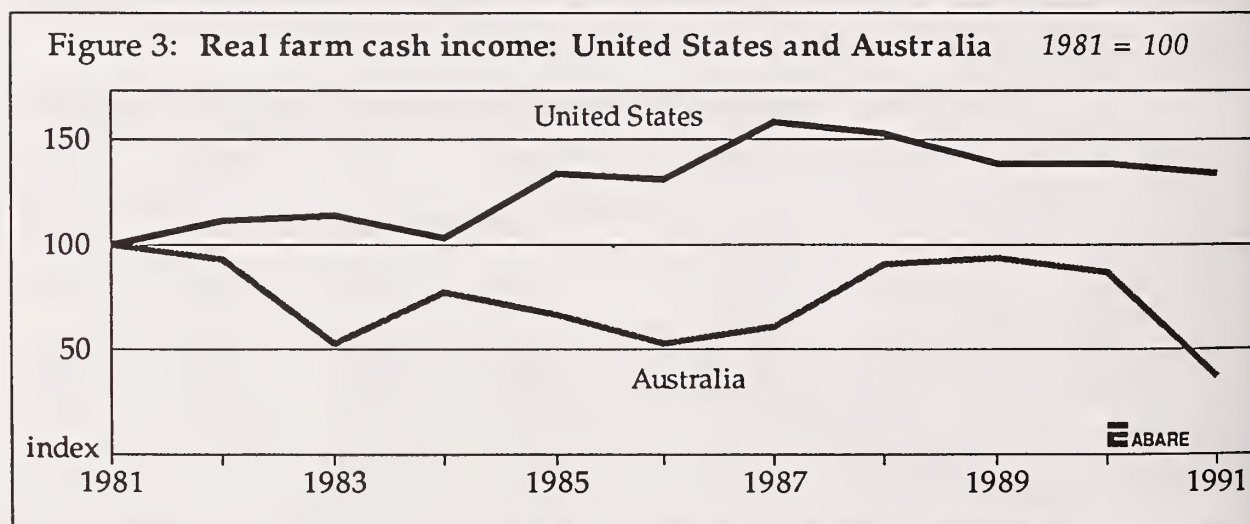
	1988-89	1989-90	1990-91s	Change	1991-92f	Change
	\$'000	\$'000	\$'000	%	\$'000	%
Australia	51	47	28	-40	23	-18
Wheat and other crops industry	53	74	48	-35	43	-10
Mixed livestock -crops industry	64	63	27	-57	29	7
Sheep industry	56	44	20	-55	2	-90
Beef industry	31	27	32	19	39	22
Sheep-beef industry	42	37	29	-22	19	-34

s ABARE estimate. f ABARE forecast.



from ABARE survey data and is defined as receipts from the sale of goods less the cash costs (excluding depreciation) incurred in their production. With the possible exception of beef, incomes in all the broadacre industries are depressed. Income levels for 1991-92 are forecast to be down substantially from those of the previous year, which in turn were far below the levels in 1989-90.

At the aggregate level, farm profits are at historically low levels. The net value of farm production (the gross value of farm sector output, less the costs of production) is shown in figure 2. This variable does not quite correspond to an aggregation of the individual industry measures of farm cash income because of the inclusion of depreciation and additional industries in the net value of farm production. The forecast level of around \$A260 million for 1991-92 is the lowest on record and stands in dramatic contrast with the recent peak of more than \$A4 billion in 1988-89. Further, despite an assumed return to normal seasonal conditions, a gradual decline in real interest rates and the exchange rate over the medium term and a gradual elimination of the wool stockpile, only a modest recovery is expected in the medium term. This highlights the importance of the generally



poor outlook for most farm commodity prices on world markets in influencing the profitability of the Australian farm sector.

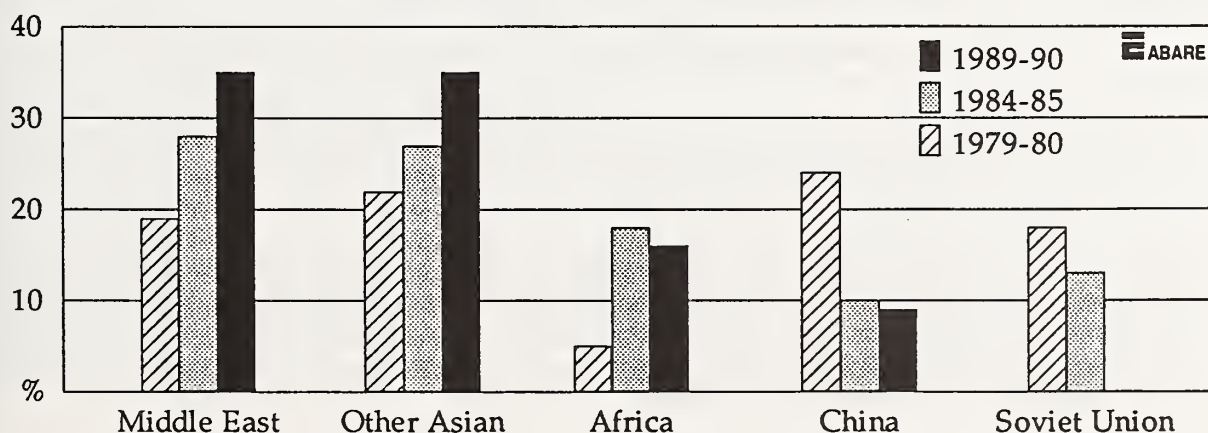
It is clear that while Australian farmers have suffered from low export prices, farmers in Europe and the United States have remained substantially insulated from such pressures as a result of the assistance and protection given to them. Although aggregated data hide some of the variation between farms, it is clear that, while Australian producers have suffered from the falling world commodity prices in recent years, farm incomes in the United States and the European Community have been broadly maintained in real terms. Trends in Australian and US average real farm cash incomes are shown in figure 3. It is the protection given to producers in many advanced countries, resulting in overproduction and surpluses, which has directly contributed to low world prices and low farm incomes in those countries dependent on exports. Hence, from an Australian perspective, a successful conclusion to the current Uruguay Round will have an important bearing on future farm incomes.

Changing orientation of Australian exports

Asia has commonly been considered an obvious market for Australian agricultural produce, mainly because of proximity. A comparison of the destination of Australian agricultural exports in 1967-69 with 1987-89 shows that Australian agricultural exports to European markets have fallen from 30 to 19 per cent, with Asian markets taking up some of the slack. The share of exports to Japan has increased from 20 to 22 per cent over the period, while the share going to China, Korea and Taiwan has increased from 8 to 11 per cent. However, the share exported to ASEAN countries has remained static at around 5 per cent, with the importance of other markets, particularly in the Middle East, rising from 22 to 31 per cent. In general, it is clear that Australia has diversified its agricultural exports away from traditional European markets toward a range of developing countries.

Similar diversification has occurred in wheat trade, although there has been less reliance on the Asian market. Over a decade in which world trade in wheat has shown no growth, increasing sales of Australian wheat have occurred in the Middle East and Africa rather than Asia. Since 1979-80 Australian wheat exports have been redirected from China and the Soviet Union toward the Middle East, Africa and Asian countries other than China. China and the Soviet Union bought almost 40 per cent of Australian wheat exports in 1979-80, and less than 10 per cent in 1989-90. This is shown in figure 4. Iran and Iraq are Australia's two biggest markets in the Middle East,

Figure 4: Australian wheat exports



accounting for 1.6 million and 1.4 million tonnes respectively in 1989-90. Egypt has remained a steady market for Australian wheat, taking almost 2 million tonnes in 1989-90. In Asia, Indonesia is Australia's expanding market, now taking around 1 million tonnes, similar to China (currently 1 million tonnes) and Japan (1.2 million tonnes). The share of Australian wheat exports going to Asia was no greater in 1989-90 than ten years earlier. Increased sales to Indonesia have offset declining exports to China.

The Uruguay GATT Round

Opportunities for reform

The Uruguay Round negotiations under the auspices of GATT have provided an unparalleled opportunity for reform of agricultural trade. As discussions enter their concluding and perhaps most vital stage, it is important that the opportunity not be missed.

Empirical studies show significant potential gains

There are numerous estimates of the impact of trade liberalisation emanating from a successful Round. Roningen and Dixit (1989), for example, calculate that full trade liberalisation would lead to a 35 per cent increase in the world price of wheat, 25 per cent for coarse grains, 20 per cent for beef and sheep meat and 65 per cent for dairy products. A number of other studies — for example Low and Love (1991), Tsolakis, Love and Helmar (1991), CARD (1991) and Gunasekera, Rodriguez and Andrews (1991) — have concluded that considerable benefits could also flow from less than complete reform.

In aggregate terms, the estimated price increases which would result from full trade liberalisation translate into an increase of between \$2 billion to \$3 billion in annual net value of farm production in Australia. This compares with the 1991-92 estimate of about \$A260 million and projections for 1992-93 to 1995-96 of around \$1 billion to \$2 billion. With other factors unchanged, such an improvement would return the net value of farm production to the levels of the late 1980s.

Australian agricultural producers also stand to gain from non-agricultural reform under GATT. For example, it has been estimated that a 30 per cent reduction in non-agricultural tariffs, coupled with a 10 per cent reduction in farm support in the major industrialised countries, would increase world gross domestic product by almost half a per cent. This would lead to some increase in demand for agricultural products and a small increase in world farm prices ranging from 1 per cent for wheat and for coarse grains to 4 per cent for dairy products. However, while any gains would be welcome, they are obviously far smaller than the benefits to Australian farmers which would flow from major reforms in agricultural trade. Therefore, developments in the agricultural negotiations will continue to be the key focus for Australian farmers.

As well as pursuing the maximum possible reduction in agricultural protection in the Uruguay Round, Australia is also keen to ensure that any remaining protection is provided in a manner which has the least possible impact on farmers' production decisions. Policies can be designed which have much smaller impacts on production, consumption, trade and world prices than do many of the policies which are currently in use. For example, direct income support via lump sum payments would be much less distorting than the current measures which are linked to production or input levels. Another option is to provide price support or deficiency payments only on a quantity of output substantially below quantities that would be produced without support, with any additional production receiving a much lower price — preferably a price closely related to the price on world markets. This would provide farmers with a continuing level of income support but encourage them to base their production decisions, at the margin, on something akin to world prices. (Roberts, Andrews and Hunter 1991).

Reform of the CAP

Assessment of recent CAP reform proposals

Proposals for reform of the European Community's Common Agricultural Policy, announced in July 1991, may provide the catalyst to multilateral reform in agriculture and other areas (services and intellectual property) which hinge on a positive outcome in agriculture in the current GATT Round. The proposals include:

- significant reductions in support prices, including a 35 per cent decrease for cereals;
- direct payments to cereal, milk and beef producers to compensate for the loss of income stemming from the reductions in support prices;
- reductions in direct payments to oilseed producers, so that, on average, the returns per hectare for oilseed production will be the same as for cereal production;
- tighter supply control measures, particularly for cereals and milk, with set-asides equal to 15 per cent of the land planted to cereals and oilseeds, and a 3 per cent reduction in the milk quota. Small producers — those for example with less than 20 hectares of cereals — would be exempt from these measures;
- each member country would be divided into several regions. Compensatory payments, for loss of income due to the reduction in institutional prices, would be based on an historical five year average yield (deleting the highest and lowest years) for each region. Payments would be made on a per hectare basis, using the regional average yield.

ABARE has made a preliminary assessment of the possible impact of these reforms on EC production and consumption of agricultural commodities and hence world markets. Assuming that the set-side policy is 75 per cent effective, the estimated effect on the EC wheat market is to reduce production by about 8 per cent in the medium term, increase consumption by around 6 per cent and reduce exports by 60 per cent. Maize imports would increase by 190 per cent, and imports of 6 million tonnes of other feed grains would replace an equal amount of exports. As a result of these changes and changes to other commodities, world prices of wheat and other feed grains could increase by about 9 per cent in the medium term.

Australia, along with the United States and other grain exporting countries outside the European Community, would benefit from the increase in world prices. The increase in grower profits in Australia as a result of these changes is estimated to be US\$130 million for wheat, and US\$50 million for other coarse grains. Gains to producers in the United States could amount to US\$500 million for wheat, US\$200 million for corn and US\$300 million for other coarse grains.

Reformed CAP would still distort producer decisions

While such changes would be welcome, it is clear that even under these revised arrangements, the CAP would continue to markedly distort EC production decisions and result in lower world prices than otherwise.

- Compensation payments would be based on a moving average of regional yields. Farmers within a region would have an incentive to increase yields to increase returns. Yields that were fixed or at least based at the national level would be less trade distorting.

- Small producers would be exempted from the set-aside requirements. This exemption means that these farmers would have little incentive to reduce their grain output.
- As the set-aside requirements only apply to farmers with a cereals area of more than 20 hectares, there is a strong incentive for these farmers to artificially divide the ownership of their land into areas which are less than 20 hectares, thereby avoiding set-aside requirements. This aspect of the reform proposals means that it is even less likely that the compensation payments would be paid on quantities that are less than would be produced without support.
- In the absence of the CAP, it is likely that the European Community would be a net importer of grain. However, even allowing for the effects of the set-aside provisions on EC grain production, on balance it is unlikely that the EC would return to being a net grain importer as a result of the implementation of the CAP reform proposals in their current form.

Continued subsidisation of US exports

While European policies are seen in Australia as the prime cause of low world grain prices, US policies have exacerbated the problem. Roberts and Love (1989) showed that the Export Enhancement Program (EEP), in addition to inducing market instability, has had a significant role in reducing the volume and value of Australian wheat production. Furthermore, the program appears so far to have had little impact on winning back markets taken by the European Community, or in influencing EC policy in any substantial way.

By the late 1980s, 60 per cent of US wheat sales were assisted by the EEP, requiring other exporters to match these price reductions to regain or maintain their markets. Roberts and Love (1989, p. 175) suggest that the maximum price discrimination effect of the EEP reduced Australian average wheat export prices in 1987 by between US\$9 and US\$13 per tonne a year and export returns by between US\$145 million and US\$201 million, depending on various elasticity assumptions. For 1990-91, it is estimated that the reduction was between US\$98 million and US\$137 million.

Recent targeted export subsidies do not appear to have met the EEP criteria, namely that each EEP proposal must displace other countries' subsidised exports in the target market, that the targeted market must have the potential as a market for grain in the long term, that it should not have a significant effect on non-subsidised imports to that market and, finally, the level of subsidy should be the minimum necessary to achieve the desired objectives (Mackie 1991). In its implementation, the EEP appears to have been used to maintain market share or run down surpluses.

No impact on EC exports

The EEP does not appear to have affected EC production or exports. EC exports have increased rather than decreased since the EEP was instigated in 1985-86. Certainly, it has contributed to increased budgetary costs associated with the CAP, as the export restitution has had to increase to meet the larger gap between the domestic and the lower world price. However, increasing the CAP burden has been at considerable (hidden) cost to the US taxpayer. In spite of this, there is no evidence to suggest that the EEP has altered the EC policies that have led to the rapid buildup of exportable surpluses.

Trade blocs

Proliferation of trade blocs

The development of regional trading blocs is inconsistent with the commonly espoused multilateral free trade system. Nevertheless, a large number of countries are members of various trade blocs, which include the European Community, the European Free Trade Association (EFTA), the US – Canada Free Trade Agreement, Closer Economic Relations (CER) between Australia and New Zealand, the Economic Community of West African States, the Association for the Integration of Latin America and the Caribbean Common Market. It is notable that as yet no Asian countries belong to trade blocs of any significance (Stoeckel, Pearce and Banks 1990, p. 24), although ASEAN member countries have recently expressed an intention to form a free trade zone within 15 years. However, an Asia Pacific bloc may emerge by default, if trade barriers hinder countries in that region obtaining access to the European and American markets, and hence are forced to increase their trade with each other.

Multilateral trade reform preferred

The move toward regionalisation of trade is very much a second best option compared with multilateral trade reform. There are two main forms of regionalism. A free trade area is a bloc in which the internal barriers to trade have been totally or substantially removed, although individual countries maintain their barriers to trade with non-member countries or other regions. However, no new or additional barriers are imposed. The formation of a free trade area represents a movement toward free trade, and is in fact consistent with Article XXIV of GATT, but some potential gains from trading with third countries are forsaken due to the external trade barriers.

Free trade areas are preferable to a second form of regionalism, a customs union, characterised by a substantial removal of internal barriers to trade but the imposition of a common barrier to trade with non-member countries. It is likely that this common barrier to external trade would involve at least some of the member countries imposing new or additional barriers to trade with non-member countries which were not present previously. The economic benefits of such customs unions are clearly dubious. The Common Agricultural Policy of the EC is a clear example of a customs union which has had a major distorting impact on world trade and which has imposed great costs on the member countries of the EC. Further, there is a risk that trading blocs established originally in the form of a free trade area might degenerate into something more closely resembling a customs union. Nevertheless, there may be political or strategic reasons for countries to form themselves into groupings, from which the formation of some form of trading bloc may seem a natural step.

The potential risks to world trade associated with the possible formation of trading blocs, particularly if those blocs take the form of a customs union, is a further reason why Australia places so much importance in achieving a commitment to worthwhile multilateral reform in the Uruguay Round.

Potential policy changes in China

Past policies

China is one of the largest producers and consumers of grain in the world, accounting for about a fifth of world production and consumption. Even a slight change in the balance between consumption and production of grains in China could therefore have profound effects on global grain trade. In spite of a reasonable economic performance since the reforms of the late 1970s, the Chinese economy has suffered from several structural imbalances which have distorted resource allocation. Current plans involve the move to a more market oriented economy at a gradual pace. Alternative Chinese policies that could influence grains trade include food self-sufficiency,

removal of consumer subsidies and implicit producer taxes on agricultural commodities, and the removal of wheat import constraints.

Self-sufficiency

China has traditionally aimed for self-sufficiency in grains. If such a policy remains in place, increasing resort is likely to be made to agricultural assistance and protection, and this would be likely to have adverse implications not only for China but also for many trading countries. Pursuit of grain self-sufficiency would lead to a net welfare loss in China because of the substantial transfer of income from both consumers and the government to producers, resulting in a misallocation of resources between the agricultural and non-agricultural sectors. The achievement of grain self-sufficiency would have an adverse effect on Australia because international prices would be lower than otherwise. For example, the net loss of real income per year for Australian grain producers, particularly wheat farmers, could be about US\$270 million (Gunasekera et al. 1991). In the United States, producers could lose more than US\$2.5 billion.

Removal of domestic intervention

Even if China does not seek food self-sufficiency per se, but rather adopts more economically rational, non-interventionist agricultural policies, there would still be major implications for world markets. For example, if China were to abandon its traditional policies of holding prices received by farmers at levels that are below world prices and subsidising consumers, domestic economic welfare in China would increase considerably because it would lead to a more efficient allocation of resources. However, unilateral reform of this kind would adversely affect other agricultural exporting countries because Chinese import demand would decline, resulting in lower world prices for a range of farm commodities than would otherwise be the case. For example, estimated reductions in the value of wheat exports would amount to US\$160 million for Australia, and US\$290 million for the United States. However, the value of coarse grain exports would increase by US\$600 million in the United States, offsetting the falls in wheat, oilseeds and rice. On balance, the total value of agricultural exports could fall by around US\$450 million a year (1986 dollars) in Australia and US\$200 million in the United States (Gunasekera et al. 1991).

Increase in wheat imports

More modest reforms, involving only the relaxation of wheat import controls and removal of consumer subsidies on wheat in China could increase overall welfare in both China and its major trading partners. In particular, producers in major wheat exporting countries, such as the United States and Australia, would benefit considerably as a consequence of a rise in the world price for wheat, and these benefits would more than offset the losses borne by consumers in these countries. The value of US wheat exports would increase by an estimated US\$600 million. The corresponding figure for Australia is US\$260 million.

In summary, there is a need to monitor the ways in which Chinese policy makers might approach further reforms designed to maintain the process of agricultural policy liberalisation commenced in 1978, because they have the potential to have a considerable impact on world agricultural commodity markets and, therefore, on farm profitability in Australia, the United States and elsewhere. In particular, the estimated impact of the various alternative policy changes on Australian farmers, as outlined above, all loom large relative to the actual and prospective level of the net value of farm production in Australia over the next few years, as discussed above.

Economic reform in Eastern Europe and the Soviet Union

The political and economic changes in Central and Eastern Europe and the Soviet Union have the potential to bring about major changes in world commodity markets of interest to Australia.

However, while economic reform holds the key to the future prosperity of the region, the breakdown of the old planned system and difficulties in making the transition to a market system have resulted in some disruption which is expected to lead to a decline in economic activity in the region as a whole for some time. This is likely to reduce net demand for many primary commodities and place downward pressure on world prices. In the longer term, the effects of these developments are likely to differ markedly among the various countries. Developments in the Soviet Union, in particular, could significantly affect world prices for a number of agricultural and resource commodities in which it is a major world trader.

The data in table 2 provide an indication of the importance of the Soviet Union to the world market for grain.

Between the early 1970s and the mid-1980s, the Soviet Union became a substantial market for grains, and it still accounts for a significant proportion of total world trade. Of even more importance is the fact that, from the mid-1970s to the mid-1980s, world supplies of (and trade in) agricultural products rose substantially, largely as a result of the buildup of large surpluses in the European Community which subsequently were disposed of on world markets by means of export subsidies. A very large proportion of that growth in world trade was accounted for by imports by the Soviet Union. The increase in Soviet imports as a percentage of the increase in world imports between 1970–72 and 1980–84 amounted to 39 per cent for wheat and 33 per cent for coarse grains. The Soviet Union has been responsible for a substantial proportion of the recent decline in world grain imports.

From the mid-1980s onward, Soviet imports of grain declined markedly. Average annual Soviet imports in the periods 1980–84 to 1987–90 declined by 6.7 million tonnes at a time when total world trade declined by 8.9 million tonnes. This underlines the importance of the Soviet Union as a major world market and the impact which developments in that country can have on world commodity markets and prices and hence on export returns received by Australian grain producers.

Economic reforms have also occurred in Poland, Czechoslovakia and Hungary. These countries have all evinced strong interest in gaining access to the European Community market for their major industries, including agricultural commodities. Access to the Community market with its high domestic prices could be expected to stimulate agricultural production in these countries, especially Poland and Hungary given their agricultural potential. Elimination of consumer subsidies and reduced incomes have combined with the loss of markets in the Soviet Union to place downward pressure on agricultural production in the short term.

Increases in production in these various Eastern European countries, if they join the EC and become subject to the CAP in its present form, would exacerbate the problems already being experienced in world markets as a result of the subsidised disposal of EC agricultural surpluses

Table 2: Wheat and coarse grains: net imports by the Soviet Union as a percentage of total world trade ^a

	Average 1970–72 %	Average 1973–77 %	Average 1980–84 %	1987 %	1988 %	1989 %	1990 %
Wheat	11.4	8.6	20.2	20.0	15.5	14.5	12.8
Coarse grains	7.4	10.9	19.4	12.0	24.3	23.9	14.0

^a Excluding intra-EC trade.

and would have adverse implications for world prices. However, the budgetary and economic costs that such membership would entail are likely to exert pressure for some reform of the Community's Common Agricultural Policy which could reduce the distortions arising from that policy.

The adoption of the Common Agricultural Policy in its present form would impose considerable burdens on consumers in Poland and Hungary because the proportion of income expended upon food is high relative to Western standards. This remains so despite the fact that family incomes in these countries include such items as subsidised housing, free medical treatment and other social benefits. In Poland and Hungary, expenditure on food accounts for some 50 per cent and 40 per cent respectively of total family earnings. If these countries were to join the European Community under the present support arrangements for agriculture, food prices in those countries would rise significantly, thus placing pressures on already strained family budgets. This is a factor which could result in some adjustments to the Common Agricultural Policy should that policy remain in place at that time.

The longer term outlook

If the region formerly encompassed by the Soviet Union can increase crop yields to levels more closely approximating those in Western Europe and solve the storage and distribution problems responsible for its massive post-harvest grain losses (estimated at between 15–25 per cent of total grain production), it is possible that its dependence on grain imports could be reduced markedly. In such an event, the effect on world grain markets and prices would be substantial. Some indication of the likely impact of such a development can be obtained from the fact that, in 1989–90, the Soviet Union imported about 37 million tonnes of wheat and coarse grains, representing almost one fifth of total world grain imports in that year. At the same time, its level of post-harvest wastage in 1990 is estimated to have been of the order of some 40 million tonnes. If this wastage had been similar to levels prevailing in Western countries, the Soviet Union would have needed to import little, if any, grain in that year. However, if substantial economic reform should also occur in the Soviet non-agricultural sector, leading to higher consumer incomes, the demand for meat and hence feed grains could be expected to rise. This could mean that the region would remain a significant importer of feed grains, although the impact of rising incomes on the demand for wheat would be likely to be much smaller.

Within the Soviet Union some republics, such as the Ukraine, produce a surplus of grain while others, such as the Baltics, have traditionally imported grain from elsewhere in the Soviet Union. The Ukraine, for example, produces around 25 per cent of wheat grown in the Soviet Union but has only 18 per cent of the population. The transfer to a more market oriented economic system is likely to involve changes in the patterns of production and consumption and will alter the regional supply and demand transfers between the republics in the Soviet Union. It is possible that the future economic and political linkages between the republics will be such that the surplus republics have no compulsion to supply grain to the others at anything less than world prices. However, deficit regions may not have the hard currency necessary to import grain from surplus republics, as in many cases the quality of their manufactured goods is currently insufficient to effectively compete on Western markets. Hard currency shortages may lead to reduced import demand from the region as a whole, and place downward pressure on world prices.

In summary, the economic reforms currently in process in Poland, Hungary and Czechoslovakia are unlikely to result in any significant increase in world import demand for agricultural commodities in the longer term. Indeed, should these countries join the European Community and become subject to the operation of an unreformed Common Agricultural Policy, the net result could be a further increase in the Community's excess stocks of commodities such as grain, dairy

products and meat. For the Soviet Union, the indications are that developments in that country are likely to have a negative impact on world import demand in both the short and medium terms. These conclusions clearly have important implications for US and Australian grain producers.

Further long term influences

Demand for grains should continue to grow throughout the 1990s. Much of this increase in demand will come from the middle income developing countries. Demand for food grains is likely to keep pace with population growth, while consumption of feed grains is likely to increase in line with the consumption of livestock products. Changes in consumer attitudes are also likely to influence consumption. As incomes rise in developing countries, consumption will switch away from grains toward meat and vegetables. As urbanisation proceeds, the desire for easily prepared convenience food rises, and a shift away from unprocessed rice and maize toward processed wheat and meat products occurs. The increasing acceptance of Western culture is likely to enhance this trend. Less significantly, increasing awareness of health issues may stimulate a move away from high protein diets. Given these considerations, aggregate demand for agricultural products by developing countries is likely to grow at around 4 per cent a year over the current decade (Gerardi, McMillan, Matthews and Fisher 1989). Furthermore, much of the growth in demand for grains will occur in East Asia and China, a region of close proximity to Australia. With its limited arable land for grain production, import demand for grain is likely to grow steadily over the long term.

Continued demand growth due to increasing population and income levels places upward pressure on prices. However, whether this upward pressure translates into price increases will depend crucially on supply side factors, such as those discussed earlier in the paper. For example, if the CAP is not substantially reformed, China adopts a policy of self-sufficiency in grain, and Eastern Europe adopts agricultural policies similar to those in the European Community, then world grain production may well grow at a rate in excess of 4 per cent, resulting in lower prices.

Concluding comments

With Australian farm incomes at their lowest recorded levels, recovery will depend on both domestic and international factors. A return to normal seasonal conditions will contribute to the recovery of the rural sector. However, also of great importance will be the prices received for Australian exports. A sustained improvement in world prices hinges on reform in several areas.

A successful outcome to the GATT talks is essential for a prosperous agricultural trade system, and if this is forthcoming, the outlook for grain exporters will be much improved. Welcome signs of reform in the European Community and a move toward decoupling of support in the United States are factors favouring a positive outlook. The various reforms in Eastern Europe, the Soviet Union and China are likely to stimulate production in the longer term and are unlikely to increase import demand in the short term. These countries need to be fully integrated into a freer world trading system through more market oriented policies both within these countries and in the rest of the world.

With the international market so closely integrated with domestic markets, policy changes in some of the major trading countries can significantly influence the prosperity of Australian producers. With the high degree of production flexibility in Australian agriculture, where many growers produce both cereals and livestock, depressed markets for one commodity can quickly lead to an increase in supply in another, particularly when the external trading environment is distorted. However, the diversity that such flexibility allows implies that Australia will be competitive in the

world grain market and expects to be a major exporter for the foreseeable future, especially if the current GATT round concludes with a successful outcome.

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ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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Outlook '92

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OUTLOOK FOR HORTICULTURAL PRODUCTS

Edmond Missiaen
Specialty Crops Analyst
World Agricultural Outlook Board, USDA

Prices

Over the past 7 to 8 years, grower prices for fruit and vegetables, especially fruit, have fared better than for agricultural commodities as a whole. This success probably is attributable to the rapid growth of horticultural product exports, and to food marketers' emphasis on fresh produce during the past decade. I also would like to believe that the sector's reliance on market mechanisms was a factor related to its health.

Grower prices have been extremely volatile over the past two years. This price roller coaster was propelled by a freeze in Florida, a cold wave that brought freezing temperatures to California and a deep freeze to the Pacific Northwest, an unusually cool spring in California, and statistics. The dreaded whitefly invasion will continue to power this thrilling ride in the months to come.

Statistics? The grower price index for all fruit, 1977 = 100, leaped from 235 in May, 1991 to 398 in June. Oranges--which account for one-third of the index--were the culprit. The average U.S. on-the-tree price increased from about \$8.00 to \$21.00 per box because Florida oranges dropped out of the index, leaving only California. However, shipments from California were only about 10 percent of normal levels because of the December, 1990 freeze damage.

For the next few months grower prices for most horticultural products are likely to remain high. Although Eastern apple crops are up, Washington's supply for the fresh market is no greater than last season's, European supplies are unusually short, and the market for concentrated apple juice is very tight. Fresh market citrus supplies are low with a shorter Florida crop of oranges and grapefruit, a slow post freeze recovery for California navel oranges, and a smaller lemon crop.

Good export markets, a smaller almond crop, a very small carryin of pecans, a short French walnut crop, and the off year of the pistachio cycle will translate into relatively high prices for tree nut crops. Lower acreage in Florida and West Mexico may keep vegetable supplies tight and prices relatively high over the winter and early spring months. Many processing vegetable growers may not fare so well. A record processing tomato crop and a large sweet corn harvest are keeping prices low. In the case of potatoes, a record fall harvest will keep prices on the low side.

In recent years consumer prices for fresh fruit and vegetables have risen at a much faster pace than prices for all food at home. Processed fruit and vegetable prices rose at a pace similar to other foods. Strong export demand and the emphasis placed on the produce departments in supermarkets are factors in these price increases. Could it also be that given the strong and increasing demand for fresh fruit and vegetables, that retailers are taking bigger margins on these items? According to calculations prepared by the Economic Research Service the shipping-point-to-wholesale price spread for Washington Red Delicious apples increased less than five percent between the early 1980s and late '80s-early '90s. However, the wholesale-to-retail spread more or less doubled during that period.

Consumer prices are likely to remain on the high side in 1992. A moderation in prices does not seem to be in the cards given the relatively strong price outlook for citrus and apples; a smaller U.S. pear crop; a probable small increase in the imports of Chilean grapes compared to the relatively short shipments last season; new, alternative, non-U.S. markets for bananas; the decline in Florida and West Mexico vegetable acreage, and our friend the whitefly. However, large supplies of potatoes, processed tomatoes, and other processed vegetables will be moderating factors.

Demand

The five-a-day campaign symbolizes the hope that the fruit and vegetable industry has for accelerated growth into the next millennium. The program will educate consumers on the health benefits of increased produce consumption. If Americans heed the message, they will double their consumption of fruit and vegetables.

There certainly is room for more fruit and vegetables in Americans' diets. In the cases of many individual commodities, such as apples and fresh citrus, several countries surpass the United States in per capita consumption. Americans seem to have an edge in the consumption of many processed items, such as orange juice, but even in these cases other wealthy countries are catching up.

In the past two decades U.S. per capita consumption of fresh produce increased while processed fruit and vegetable consumption tended to stagnate. Increased consumption of processed items such as fruit juices, raisins, frozen potatoes, and other frozen vegetables has been offset by declining consumption in categories such as canned fruit and vegetables.

Over one-half of the increase in fresh fruit consumption was captured by bananas and table grapes. Lettuce, tomatoes, and onions were the leaders on the vegetable side. The increasing demand for fresh fruit and vegetables may help to explain why consumer produce prices were able to rise more than the prices for other foodstuffs.

Overall, the recorded per capita consumption of fresh fruit and vegetables increased 30 percent in the last 20 years. Given this record, the challenge of doubling consumption over the next 10 years is daunting.

I would like to add a note of caution about interpreting per capita consumption statistics. The U.S. data, especially for vegetables, are incomplete. They count only those commodities for which we have data. In the case of vegetables, 13 fresh market items, excluding potatoes, add up to 97.3 pounds in 1990. Adding in cucumbers, bell peppers, cabbage and cantaloupes would add another 20 pounds to the total. USDA plans to expand the list of commodities counted, so that these data become more complete.

Trade

In the year ending last September, U.S. exports of horticultural products increased 10 percent to \$5.3 billion dollars. The average rate of increase during the past 5 years was 12 percent. In 1991 the biggest dollar advances were made by fresh vegetables, grapefruit, apples, tomato products, almonds, and wine. The outlook is good for another substantial increase in 1992.

Last fiscal year, imports of horticultural products declined for the first time in more than a decade. They totaled \$6.8 billion. Declines in the quantities and prices of orange juice and fresh tomatoes were main factors contributing to the decline.

Horticultural product exports, and those of other high value products, such as meat, have performed much better during the past several years than exports of other agricultural commodities. Three factors have contributed to the success of horticultural product exports, and will continue to favor them in the next few years.

Before the Berlin Wall came down, foreign trade barriers for fruits and vegetables started to tumble as if struck by a global earthquake. U.S. exports to Japan, Korea, Thailand, Taiwan, the Philippines, Indonesia, Australia, Mexico, Venezuela, Colombia, Brazil, Sweden, the European Community, Canada, Eastern Europe, and elsewhere have benefitted from declining trade barriers.

The reduction in import restrictions has come about as the result of bilateral negotiations, challenges under the dispute resolution provisions of the GATT, accessions to the GATT, and unilateral trade liberalization in many countries. In 1991 trade liberalization helped U.S. exporters to increase sales to Korea from \$59 million to \$79 million and to Venezuela from \$9 million to \$30 million.

Countries around the world are continuing to move away from government controls and toward free markets, and as they do, they will be opening their borders to imports of agricultural products, especially non-staple products, in an effort to keep local prices down and to promote competition. This trend will continue even if the Uruguay Round fails.

Export promotion, financed in part by the USDA, has been a successful tool for increasing horticultural product exports. In the fiscal year ended last September, organizations promoting horticultural products received 48 percent of the \$200 million available under the Market Promotion Program.

Finally, exports of fruit, vegetables and tree nuts, benefitted from the devaluation of the dollar in the mid-1980s. Exports in fiscal years 1987 and 1988, which increased 16 percent and 20 percent, gained the most from the change in the value of the dollar.

The U.S. wine sector illustrates much of what has been happening to horticultural products in recent years. However, because wine is an alcoholic beverage, it has faced special problems. The consumption of wine, like other processed products, has been stagnant. In the most recent years, per capita consumption has declined. Exports of wine now are four times the level of exports in the early 1980s. Imports have dropped sharply. In 1991 imports will be less than one-half of the 5.4 million hectoliters imported in 1984.

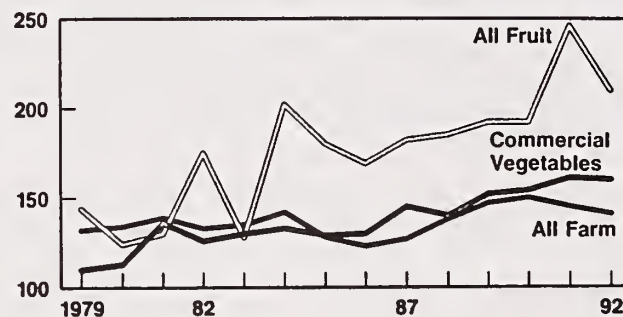
The Future

What does the future hold? I think the next few years will bring:

- Increased costs as minor use pesticides are withdrawn and regulatory constraints, especially those related to environmental quality, increase.
- A more consumer driven industry. Successful growers and shippers will be those able to respond quickly to changing demands for variety, quality, price, and consistency of supply from finicky consumers.
- Continued growth as both domestic and foreign demand increase.
- Demand that is less price elastic as institutional buyers take increasing shares of the supply. This could bring greater price volatility for fresh produce.
- More competition from foreign suppliers as they respond to improved access to the U.S. market, and as buyers try to lessen their dependence on a single source of supply.

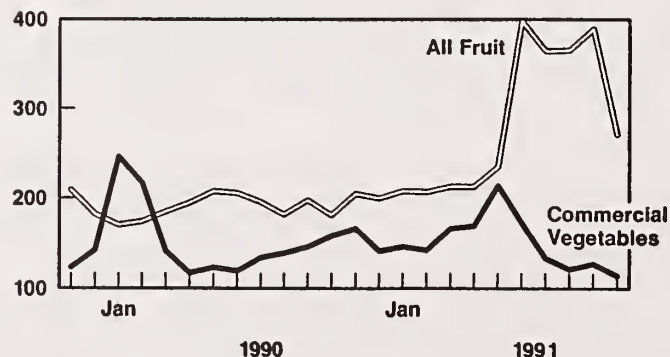
Prices Received by Farmers

1977 = 100

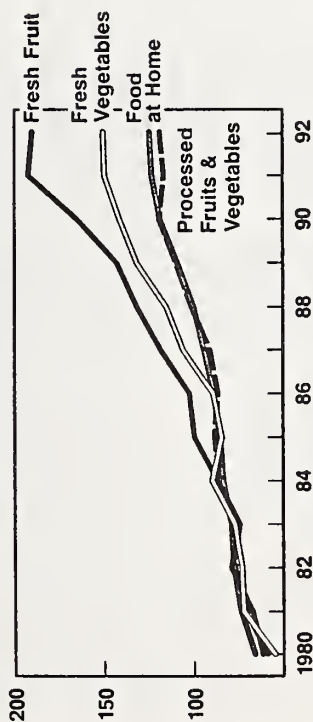


Prices Received by Farmers

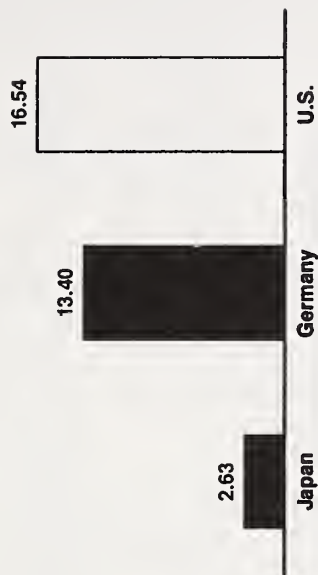
Monthly, 1977 = 100



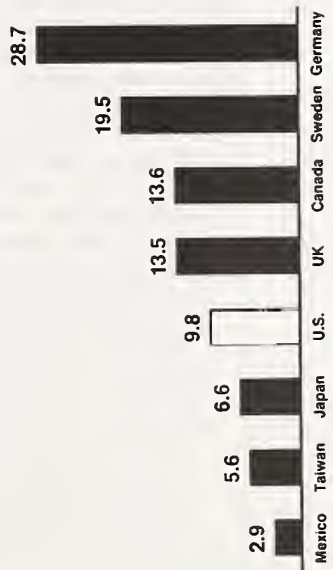
Consumer Price Index
1982-84 = 100



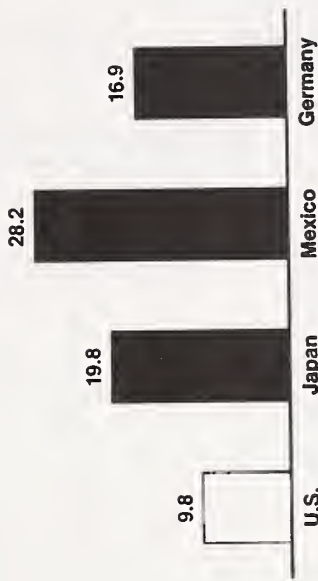
Consumption of Orange Juice
Liters Per Capita, 1989/90



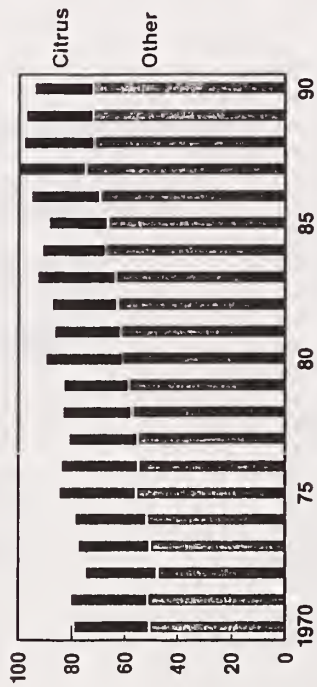
Consumption of Apples
Kilograms Per Capita, 1989/90



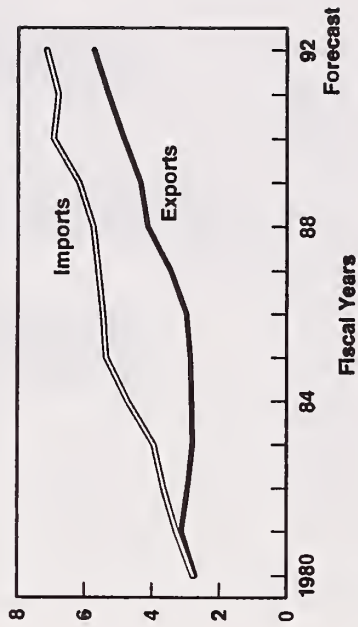
Consumption of Fresh Citrus
Kilograms Per Capita, 1989/90



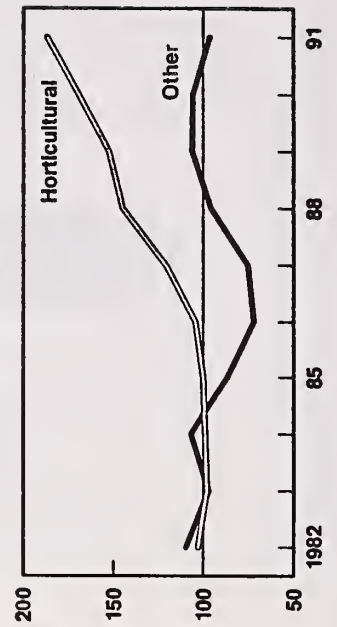
Fresh Fruit Consumption
Pounds Per Capita



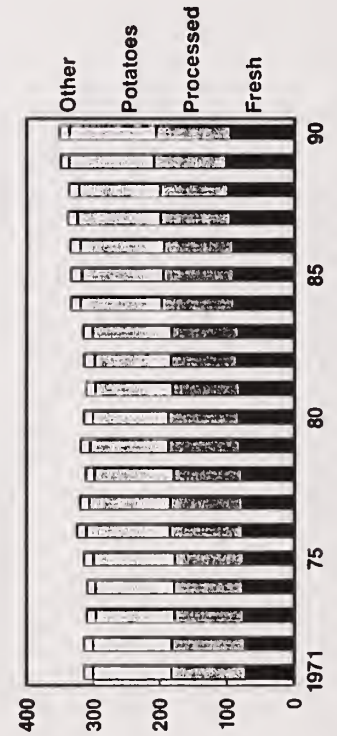
U.S. Trade in Horticultural Products
Billions of Dollars



U.S. Agricultural Exports
1982-85 = 100



U.S. Vegetable Consumption
Pounds Per Capita





Outlook '92

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**PUBLIC POLICY ISSUES THAT CHALLENGE THE FRESH FRUIT
AND VEGETABLE INDUSTRY FOR 1992**

George S. Dunlop
President, United Fresh Fruit and Vegetable Association

Good Morning, I am pleased to share with you the public policy issues that will challenge the fresh fruit and vegetable industry in 1992. As president of United Fresh Fruit and Vegetable Association, I bring to you the perspective of members of our industry from all across America.

First of all, let me say that the nature of the issues facing the fresh fruit and vegetable industry in 1992 should be of no surprise. Three forces have been crucial for the past decade -- consumer attitudes, the regulation of both production and marketing of our products, and the impact of international trade. I'd like to address all three by first putting them in context, then explaining why they are so important to the fresh produce industry and finally, what I see to be the specific issues of the coming year.

Two unique characteristics differentiate the fresh fruit and vegetable industry from other elements of the agricultural and food industry. These are perishability and seasonality. Many of the developments in our industry over the past few years are the results of efforts by firms with expertise in many areas to enhance the benefits and overcome these difficulties of fresh fruits and vegetables.

I can report with great enthusiasm that business firms in no other sector of the food economy in the United States today have been more innovative, dynamic, resilient, entrepreneurial, and successful in improving conditions for meeting the challenges and opportunities of the marketing of fresh fruits and vegetables.

The defining characteristics of perishability and seasonality mean that our industry is one that is, of necessity, composed of different sectors, each of which adds value in ways that are fundamentally necessary for the success of other sectors. In short, ours is an industry of middle-men. The farmer is at the core: adding value to seed, water, sunlight, capital, and agronomic technology. Perishability and seasonality require that growers have the immediately and constantly available support of other sectors in our industry: shippers, brokers, transportation specialists, wholesalers, retail and foodservice buyers, and, of course, consumers -- and all the equipment and service providers in between.

It is impossible to understand the issues of concern to the fresh fruit and vegetable industry without comprehending this reality. Unlike most other product lines in the food industry, fresh fruit and vegetable people are bound together in common cause whether they like it or not. It's all for one, and one for all. This isn't rhetoric -- it's reality.

The fresh fruit and vegetable industry is successful, growing, and, as a whole, financially sound. But U.S. per capita consumption is among the lowest in the world -- some 258 pounds per annum compared with 500 pounds in Canada, 400+ pounds in Europe, 720 pounds in Asian nations. It did increase about 8 percent last year, and about 22 percent over the past decade, so we are on the right path. We have an industry goal of doubling consumption by the year 2000, and have the good fortune of having the official policy of the government of the United States to support us. That policy is embodied in the Dietary Guidelines for all Americans. The USDA, HHS, the National Academy of Sciences and the Surgeon General all insist that Americans should double their consumption to at least five servings of fruits and vegetables per day. In short, the overall outlook for the fresh fruit and vegetable industry could not be more pleasing.

But the road to success is never without bumps, washouts, and detours. That's just business. Our role as a trade association is to empower our people to deal with the difficulties along the way and to be well informed and positioned to develop and take advantage of opportunity at every turn.

Many of the issues the fresh fruit and vegetable industry will confront are the same as those confronted by all business people across America -- excessive taxes, inflation, recession, the roller coaster economy. Other factors are those over which no one has direct control -- such as weather. However, many issues can be faced head on to good effect. By monitoring and staying on top of issues in three specific areas, fresh produce industry leaders can guide the industry to greater success.

It is impossible to cover every issue and opportunity for success in the time allotted here, and I won't even begin to attempt to do so. Instead, let me identify and briefly discuss three key issue areas that will impact our industry in 1992. I'll be happy to supply more comprehensive materials to those who wish to contact me directly.

As I mentioned earlier, the three issue areas of greatest concern are: 1) consumer attitudes; 2) regulation of production and marketing; 3) international trade.

CONSUMER ATTITUDES

Consumer confidence in fresh fruits and vegetables is absolutely crucial to increases in consumption that will drive the success of our industry in 1992. This is an issue because there have been serious challenges to consumer confidence in past years involving unwarranted assertions about unhealthful pesticide residues. Our industry responded to widespread alarm in 1989 by creating the Center for Produce Quality (CPQ) to deal forthrightly with assertions of food safety alarmists -- and we seem to have been successful. A recent CPQ study showed that consumer fears are on the wane though concerns remain high. Our on-going consumer study called Focus on Produce in which we are engaged with Produce Business, our industry's leading monthly trade magazine, also showed increased consumer

confidence. Indications are that the Packer's Fresh Trends survey for 1992 when presented at our annual meeting in February will indicate the same thing .

In 1992 we expect to have a continuing series of concerns and alarms that can impact consumer confidence if for no other reason than that there are organizations that are in the business of mongering fear. However, wherever there are legitimate concerns -- as in the case of certain kinds of microbiological contamination -- we are equipped to deal with them and will be keen to earn a high degree of consumer confidence.

We are especially excited about the tremendous potential in 1992 for increased promotion of our products. United has operated a dozen "Fresh Approach" generic promotion programs for about 40 years to very good effect and the number of new tools to enhance consumer confidence has never been greater. Fresh Approach programs include a JUNE IS NATIONAL FRESH FRUIT AND VEGETABLE MONTH; the Focus on Produce survey I just mentioned, and new activities of the Produce for Better Health Foundation being undertaken in conjunction with virtually everyone in our industry, plus the National Cancer Institute and many private health and nutrition organizations. Many private produce firms -- from growers and shippers to retailers -- have underway more energetic advertising and promotion programs than ever, all eager to make good and appropriate use of the effective "5-A-Day" concept that encourages the doubling of per capita consumption. In fact, even the 1990 Labeling Act will be a vehicle to educate and inform consumers about the many benefits of produce.

What industry could be more blessed with such wonderful opportunity for success!

REGULATION OF PRODUCTION AND MARKETING

In addition to continuing CPQ efforts, and other important promotional activities which build consumer confidence and thereby protect us from unwarranted alarm, we have been vigorous in seeking improved rules and regulations for the safe use of crop protection chemicals.

In 1992 we will continue our strong support of USDA and EPA efforts to assure the most effective statutes and regulations governing these matters. One of our top legislative goals is the adoption of the Food Quality Protection Act of 1991, otherwise known as the Bruce/Bliley bill. This legislation will extend and modernize the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Food Drug & Cosmetic Act in ways that will assure consumer confidence and a science-based food safety public policy.

Perhaps the most compelling concern for 1992 is the critical need fruit and vegetable growers have for continuing registration of vital fungicides and other "minor use" crop protection chemicals. In October our industry formally agreed to establish the "Minor Crop Farmers Alliance" to modify current laws and regulations to assure that fruits and vegetables and other so-called minor crops have essential registrations. No issue is of greater and more compelling need in 1992 than this.

Other related "food safety" issues involving consumer confidence in the legislative and regulatory arena include favorable resolution of so-called

"circle of poison" legislation, cosmetic grading standards, national uniformity or harmonization of food safety laws and regulations, including those pertaining to post-harvest applications and the labeling of fresh fruits and vegetables in retail stores.

In marketing, the new FDA guidelines for nutrition labeling for fresh fruits and vegetables have been worked out in a very practical way for our industry -- a commendable success. 1992 will see the application of new rules and regulations that most in our industry believes will enhance the marketing of our products. Much attention will be devoted to details of regulations, and we have confidence that we can work with FDA, USDA, and other regulatory agencies to make it work for us and serve the needs of the consumer. National uniformity and harmonization will also remain a key goal in this area for us.

The Perishable Agricultural Commodities Act is the framework -- the skeleton vital to the functioning and existence of the fresh fruit and vegetable industry. No area of government relations issues is of greater long-term fundamental importance to our industry than PACA. PACA is generally benign as far as regulation goes, but it is powerful in assuring protection in the commerce of our highly perishable products. In 1992 we hope to modernize PACA to make it more efficient, less costly, and to increase its effectiveness in serving its purpose in our highly distinctive and competitive marketplace.

Other domestic and regulatory issues include our hope in 1992 to overcome problems for all agricultural employers in created by the Supreme Court in its Adams Fruit Case decision. And the list goes on to include environmental legislation pertaining to water quality, solid waste management, availability of refrigeration, transportation taxes and de-regulation issues.

INTERNATIONAL TRADE

The fresh fruit and vegetable industry is global in nature -- transnational really. Imports account for approximately 25% of U.S. consumption, and exports add \$484 million to the U.S. balance of trade each year. Global trading in the fresh fruit and vegetable industry has assisted in increasing consumption of produce since many fruits and vegetables are now available all year round and have become more familiar to consumers. Because our industry is transnational, we are thoroughly and fundamentally dedicated to the concepts of a free trading system on a multilateral scale. The industry is critically involved in promoting open and fair international trade policy.

The current round of the General Agreement on Tariffs and Trade is of great significance to our industry. Discussions in the Uruguay Round requiring that sanitary and phytosanitary (human and plant health) standards be based on sound science, and providing for a dispute resolution mechanism, will give U.S. traders a more powerful, multilateral context within which to resolve disagreements on set standards. Presently, over 13 countries have regulations which are considered by the U.S. industry to be of questionable validity as health protection measures -- in other words, disguised trade barriers. Some of these countries are major trading partners of the U.S.; for example Japan, Canada, Mexico,

Korea, Western Europe, Australia, the Philippines, Spain, Israel, Taiwan, Scandinavia, Thailand, and China. The U.S. industry has engaged in bilateral talks with individual countries using these questionable standards, but results have been laborious and slow. A multilateral system which imposes trade penalties against nations found guilty of using invalid S&P measures as trade barriers will greatly benefit the fresh fruit and vegetable industry. It is also our hope that the GATT Round will result in adequate measures in subsidy reduction, providing the U.S. industry with a more level playing field in competing with other highly subsidized foreign produce.

The Europe 1992 program, the creation of a European Common Market, may also provide opportunity for the U.S. produce industry. U.S. exporters welcome the harmonization of standards amongst the participating European countries. If the 1992 program is successful, U.S. exporters will no longer have to meet over 12 different country requirements for shipments of fresh fruits and vegetables to Europe. Shipments will then only be required to meet one set of harmonized standards no matter which country is receiving the product. Such a system will not only reduce the amount of labor required for shipping to different countries with different regulations, but will give U.S. exporters more flexibility in changing the destination of the product. Some apprehension does remain, however, over the possibility that the 1992 program will result in a more protectionist "Fortress Europe," but most U.S. exporters feel that the harmonization of standards will make trading with Europe less complicated and result in more trade.

About 39% percent of the produce traded internationally is transported via ocean carriers. While global produce trade is rising, so is the cost of ocean transportation. An increasingly higher proportion of the cost of fresh fruits and vegetables paid by the buyer is due to ocean freight charges. While many factors influence this rising cost, the U.S. shipping community argues that a significant factor is the inadequacy of current ocean transportation law to provide a competitive climate, thus allowing carriers to charge exorbitant fees for shipping product. To avoid confusion, I should clarify that the term "shippers" means those who are selling/shipping the product. The term "carriers" represents the ship or vessel industry.

The issue of competitiveness in ocean transportation is one of great concern to a large segment of produce industry members. Two of United's governing bodies strongly support change in the most recent ocean transportation law, The 1988 Shipping Act Amendments. The 1988 Amendments are now under review and United, as well as a coalition of other U.S. shippers, supports fundamental change in the Shipping Act to promote more competition among carriers. A primary goal is to allow carriers the right to negotiate independent, confidential contracts with a shipper. The 1988 Amendments provided antitrust immunity for ocean carriers. Presently, contracts must be negotiated in public thus allowing all carriers to know the terms of business and prices. This system creates a situation whereby the carriers can set the charges for freight and be assured that no other carrier may offer a better, more competitive price. The U.S. shipping industry feels that allowing confidential negotiation of contracts will make the ocean carriers more competitive and keep freight rates at more reasonable levels.

The U.S. produce industry also has a continuing interest in trade with Latin America. We are very involved in the North American Free Trade Agreement (NAFTA) negotiations, and bilateral initiatives with South American Countries. Pat Hanemann, Vice President of Dole Citrus and Chairman of United's International Trade Committee is participating on a panel here at Outlook and will address NAFTA in more detail during that time.

The present international policy trend is toward "freer" trade. As I've commented, United and the fresh fruit and vegetable industry have always advocated open markets, knowing that the U.S. industry has the finest quality and most competitive supply of produce in the world, and also knowing that products from other countries are necessary to complement the spectacular array of produce offered to consumers. While international trade policy continues to be a challenge, it is one that the U.S. fresh fruit and vegetable industry is willing and excited to meet head-on. It has been our purpose to assure that trade policies and practices are fair and workable for all parties.

CONCLUSION

In summary then, let me conclude by briefly recapping these points:

Consumer confidence in fresh fruit and vegetables is absolutely crucial to increases in consumption that will drive the success of our industry in 1992. We seem to be making headway with consumers in their confidence levels. Continued success of the Fresh Approach programs and the anticipated success of the national "5-A-Day" program can only strengthen confidence in our products.

Regulation of fresh fruit and vegetable production and marketing is a constant and driving force within the produce industry. Among the many issues we will face in 1992 are: adoption of the Food Quality Protection Act of 1991, assurance of registration of "minor use" crop protection chemicals, incorporation of nutrition labeling and the modernization of PACA.

And finally, international trade. As I mentioned earlier, the produce industry is transnational. We are thoroughly dedicated to the concepts of a free trading system on a multilateral scale. Many opportunities exist, especially if the GATT provides the industry with a level playing field. In addition, harmonization of standards in the EC, improvements in the 1988 Shipping Act, and a North American Free Trade Agreement that recognizes the legitimate concerns of our domestic growers are steps that will increase opportunities for success.

All in all, the outlook for the fresh fruit and vegetable industry in 1992 is one of optimism. There will be bumps, no doubt, but our industry is used to that and has the talent and the competitive dynamics to treat every challenge as an opportunity.

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NORTH AMERICAN TRADE ISSUES

Dan Dempster
Executive Vice President
Canadian Horticultural Council

The Canadian Horticultural Council (CHC) is a voluntary not for profit national association. Membership consists primarily of Canadian producer organizations of a provincial scope, that is groups of producers of a specific commodity nature or grouping of commodities. eg. the Ontario Fruit and Vegetable Growers' Association. Additionally, Council has members from the processing and fresh distributive sectors which makes it unique somewhat as our focus, while perhaps concentrating on producer issues, tends to identify solutions which address the best interests of the total industry. In point of fact, it works as a horticultural parliament. However, it is primarily a producer body. Commodities coming under the CHC umbrella include fruits and vegetables, including grapes, mushrooms, apples and potatoes; flowers and nursery crops. According to the 1986 census, there were over 22,000 producers - albeit our reporting includes a threshold of \$2500 sales to qualify. Essentially, 20% of the producers produce 80%+ of the production. Likely, the upcoming 1991 census will show a dropoff in the number of producers which will reflect continued rationalization within the producing sector; a similar trend to that of the processing and distribution sectors.

In 1990, Canadian production of horticultural crops exceeded \$2.2 billion at the farm gate. Of this total, \$1.4 billion were fruit and vegetable crops, 40% of which would be processed and the balance sold fresh. \$700+ million of the total would be floriculture and nursery products, the balance in other horticultural products such as maple syrup, etc. While in total the figure would pale compared to U.S. production, one must remember that the Canadian population is roughly 1/10th that of the United States and the Canadian industry is governed by weather restrictions somewhat more severe than the southern United States.

For climatic reasons, Canadian producers are usually the last into the marketplace and therefore are subject to the vagaries of supply and demand like the U.S. industry. However, it is very much a result of

U.S. producing and marketing trends which impact on Canadian prices; that is, we are price takers, not market setters. This is generally true across the majority of horticultural crops, but in all fairness, not all. We find ourselves in a somewhat similar position to the northern states, albeit we have an exchange rate differential, reducing tariff rates and a border which makes conditions somewhat different. The premise for the Canadian horticultural tariff system was indeed based on our seasonal situation and the fact we are generally price takers vis a vis the U.S. supply situation. We are now in the situation where these tariffs will disappear under the Canadian United States Trade Agreement (CUSTA).

Some within the Canadian horticultural sector were adamantly opposed to the CUSTA for the reasons enunciated above. However, there were also strong proponents within the Canadian industry who saw benefits from a "free" trade agreement with our U.S. counterparts. The challenge for the CHC then became one of bridging these two polarities such that we could assist, or influence our government on what needed to be the components of a deal which reflected, or balanced export and import interests. This is of course another challenge for us when we contemplate Mexico in a trilateral arrangement. We suspect this will be a major, perhaps more difficult challenge for our U.S. friends in the fruit and vegetable sector than it will be for us.

To understand why, a brief review of trade statistics should help. In a normal year, Canada exports approximately \$500 million of horticultural products, almost 75% to the United States - \$75 million or so of fresh fruits and vegetables. In a normal year, Canada imports \$2.5 billion of horticultural products - \$1.6 billion of fresh product, of which 90% of fresh vegetables and 67% of fresh fruit are from the United States; a significant proportion of which are directly competitive products during our actual production and marketing season. Obviously, exports are important, but so are imports. These numbers demonstrate that it is the United States where our export and import interest or concern is the greatest - at least for horticulture. Therefore, we have in our sector at least already negotiated the trade deal which will most affect the future, good or bad for many Canadian producers. Not to be frivolous, but it is to us what the trade deal with Mexico may be for the U.S. industry.

The impact of the CUSTA has increased the calls for a level playing field - ie. we can compete if : 1/ we had their "cheap" labour, 2/ we had access to their pesticides, 3/ we had their irrigation assistance, 4/ we had their energy costs, 5/ we had their taxation system, etc. This has been an all consuming exercise which continues to frustrate one and all. At the same time, there are greater calls to ensure that imports live up to the same standards that the Canadian industry must live with. Interestingly, this has also been a preoccupation of the United States vis a vis Canada after the CUSTA. Sadly, while some of it is likely legitimate on both sides of the border, it distresses us to see some of the non-productive efforts of government due to the, at times incorrect perception of unfairness.

However, as tariffs come down, this is a natural pressure that governments are placed under by industry. Negotiators always get a deal in the best interests of the country - they are not governed by the at times impractical agreements that they think will work, nor are they responsible for implementation, or necessary policy adjustments that are often required. If they were, they might negotiate differently. To be fair, that is not their mandate. The only reason for this diatribe is to emphasize the point that the U.S. industry and U.S. government, at least for fruits and vegetables will be under the same pressures that we face in Canada because of the CUSTA. Perhaps, it will be even more intense.

Having said that, we could not achieve an exemption from the CUSTA; it seems equally unrealistic that this will occur for the U.S. industry with Mexico. U.S. agricultural export interests in Canada were, I believe, largely for the fruit and vegetable sector. I do not believe the U.S. would have accepted a deal without our "inclusion". It seems that, if the U.S. administration is committed to a deal with Mexico, the same scenario exists. Once you start exempting, where do you stop?

As we said, once you accept this premise, as we were faced to do under the CUSTA, you then have to focus on how you achieve your export aspirations without blatantly disregarding some potentially damaging import problems. That is, facilitating exports and imports, but not giving away the store. This is what the Canadian industry feels we achieved under the CUSTA, albeit it is not perfect - what trading agreement is there that can increase exports while stopping imports?

We apologize for this somewhat lengthy recall of a deal that already exists, however, in many ways the United States was our Mexican "free" trade deal. What about Mexico? Well, we have essentially adopted the same pragmatic approach that we did with the CUSTA. Since the Canadian government deems it to be in Canadian interests, then we are going to be in. We are not encouraging it for our sector, we'll explain why in a minute. It is our assessment that since the U.S. actively pursues such a deal with Mexico, it only makes sense that Canada become involved now, rather than later. The concept of a trilateral North American "freer" trade zone excites economic thinkers (albeit economic visions do not always match the marketplace realities). Additionally, one must consider Europe 1992 and the potential outcome of the GATT.

We have examined 1989 trade statistics with Mexico and determined that we imported \$60.7 million of products of a directly competitive type (over 20). However, we also imported an additional \$760 million of these same products, mostly from the United States. Our conclusion is that the U.S. is much more of a player in our market than Mexico; we're already faced with tariff elimination with them, the inclusion of Mexico will not likely be the straw that breaks our back. A further assessment of these Mexican imports demonstrates that a significant percentage come in outside of our season and are not

subject to tariffs, or are products such as melons and eggplant where we have no tariff anyway - you can't lose what you don't have! The total "dutiabale" volume of imports approximately \$31 million, or roughly \$3 million of tariff protection that will potentially disappear. It does not take much analysis to realize that the Canadian government will not exempt us for this amount.

What about exports? We looked hard, but in 1989 these amounted to less than \$1 million. A simple assessment would suggest there is little in it for us, therefore we should be against it. However, there are interests and there is potential for some crops particularly if the purchasing power of the average Mexican citizen increases over time. This of course is what drives the engine for freer and freer trade.

In summary, we will have to balance our import and export interests if a trilateral deal is in the offing. How will we do it? Hopefully, in the same manner as we feel we did under the CUSTA. We also feel that we can play a constructive role for both the U.S. and Mexican interests who are fearful of either a disastrous deal or no deal at all. Does our industry have concerns? Our sector is concerned about the difference in wage rates, however, this is also a concern vis a vis the U.S. Our industry is concerned about pesticide usage and their access to products we don't have; another complaint under the CUSTA. Our industry is concerned about the different environmental regulations and social program costs that Mexican industry face; again a bilateral concern. Also, we are concerned about the potential for plant disease and pest problems.

If a trilateral deal is negotiated, it seems likely that the major element will be tariff reduction that will impact on our sector, and likely the U.S. industry. Governments can not give up responsibility in ensuring safe food, environment and plant disease protection. As tariffs come down, it does put pressure on other instruments, be they technical or trade remedy to deliver import protection from "unfair" trading practices. This must be conterbalanced with the fact that the other signatores will be trying to do the same thing for their import sensitive sectors. Consequently, the number one objective of governments should be to develop a set of rules that are applied on a uniform basis between the three signatores. That is, it is not used for harassment purposes - you may find that to date the CUSTA has not totally eliminated this as a problem. The only way to eliminate these trade problems is to eliminate trade! Also, it is equally important that the process for the application of rules or trade remedy is equivalent, or harmonized. This can be achieved, however, it likely will take longer than the time many have left in their careers.

What would we like to see for the Canadian industry vis a vis Mexico? Essentially, what we now have with the U.S. under the CUSTA. We also believe they would reflect or balance U.S. export vs import interests. These are:

1/ Maintenance of a sound regulatory base, eg. grade, containers, anti-consignment regulations. These are provisions which the U.S. has or could have under their marketing order system. Our constitution currently does not allow similar authorities under such a system - we must achieve it under various Acts. Many of these regulations do not impede trade; where they become important is when prices are down and diversion of product becomes a "marketing" challenge. Often, it is product that has no buyer which hurts the market and the producer feels the ultimate pain. This pain translates itself into calls for anti-dumping and other measures to control imports - legitimate or not.

2/ Harmonize, or obtain acceptance of equivalency, for the pesticide registration systems as much as possible without sacrificing environmental, worker and human health considerations. This would help U.S. and Canadian producers and eliminate some of the technical barriers that exist that are irrelevant in some cases and simply add to the confusion on food safety and hurt consumer confidence. A lot of the focus in our two countries that ours is safer than yours is absolute baloney. The preoccupation to "nail" imports is often misguided and a waste of time and financial resources. It does however create jobs!

3/ Maintenance of anti-dumping and countervailing duty instruments as a final course trade remedy measure where the rules are being met, but it is subsidies or dumping that are the problem. This is an area which requires much work in clarifying what is a subsidy, what is injury and what is actually dumping. The CUSTA has not eliminated these instruments - it has demonstrated a need to work together to resolve these points such that we can maintain these instruments but have greater confidence that when one is being used, it is based on fairness and not simply political considerations. I say this in all due respect to all the political process. The best start could be acceptance that no one is pure.

4/ Comparable treatment at border points and acceptance of equivalency in certification or inspection procedures. Certainly, as a principle this makes sense; the CUSTA shows we have much work to do.

5/ A dispute settlement mechanism which cooperatively deliberates on disputes, including technical regulations, and through consensus, determines a solution which binds the parties to some form of action. That is, you may win some, you may lose some. If we are truly to focus on fair trading rules, then no one should argue with the concept. The problem often is that the industry that feels they were wrongly aggrieved, may not like the decision. Our observation is that our own government does not always give our industry, exactly what we want. They couldn't or they wouldn't be a government.

6/ A safeguard mechanism which can assist industry against distressed pricing. The CUSTA begat a snapback tariff from the negotiators. Of interest, Canadians probably wanted it more than the U.S. side. Whatever, this became the vehicle for industry protection. While of some use, the conditions required under the CUSTA for it to be used restrict its potential use - if you are an exporter this may be good

news. It is, however, a cumbersome device which requires a significant amount of administration and statistical monitoring - again a good employment exercise. Notwithstanding, it may have some use. In 1990, it was used once; on fresh asparagus from the United States. To qualify, the import price fell below the formula and the acreage criteria showed there had been no increase in Canadian production. The problem was this: The average import price fell from approx. 90 cents/lb to approx. 55 cents/lb. Under the CUSTA we were allowed to snapback a 3% tariff thus providing an additional 1.65 cents protection, which is dreadfully short of the 90 cent average. Even were the whole tariff of 15% to be snapped back, it would have been woefully short of the average. The point being it has some potential for the U.S. industry, and indeed the Canadian industry. It also has limitations too. It cannot address a situation of market collapse.

The import price criteria was triggered on several commodities in 1990 from the United States, however, the acreage criteria was not. Therefore the snapback could not be used. This again demonstrates its weakness, if you have an import focus; or its strength if you have an export focus.

7/ Finally, nothing stirs up the Canadian sector more than distressed priced situations, as enunciated above. For this reason we have consistently supported a surtax mechanism such as outlined on the attached. We recognize that were there to be acceptance, then it could be used against us as well. Since 1979, when we "got" the newer tariffs, we have witnessed approximately 20 situations where it could have been used against the U.S. - given the level of trade this is insignificant. These situations tend not to be chronic problems, therefore, it is not an annual event. Were it to be, then the formula will reflect a reducing amount of "protection". That is, it will not perpetuate or guarantee an industry's future against a more competitive country.

Summary:

We have concluded by summarizing our concerns and possible aspirations under a trade deal in which Canada and Mexico were to be involved. We have spent perhaps more time than you desired on reference to the CUSTA, in part because it so greatly affects our thinking towards Mexico. In part, because we feel that some in the U.S. industry who have concerns vis a vis Mexico, match some of our own concerns; and also mirror our concerns with trade with our largest trading partner, the United States. We believe that, should the U.S. continue to pursue such an agreement, that it only makes sense for Canada to be involved. In this latter scenario, pragmatically, it seems inevitable that our sector will not be able to hide from it. Consequently, it makes sense to participate fully to ensure our

producers concerns are understood, and where possible addressed. Finally, we should cooperate with U.S. and Mexican industry in such a fashion as to ensure that the rules are fair and that, in this exercise, to achieve those aspirations of increased competition, improved purchasing power, and improved lifestyles, that all is not achieved at the expense of throwing our sector to the wolves. If Europe with all its history and differences can move ahead, perhaps the three countries involved in this challenge can also.

November 29, 1991

Assessment: Snapback Tariff Effectiveness

Under the Canada United States Trade Agreement, both countries agreed to a snapback tariff mechanism for a 20 year period for use on "low" priced imports of fresh fruits and vegetables. This provision commenced on January 1, 1989. Under the snapback agreement, two conditions must be met if it is to be applied. 1/ The import price of the previous 5 year average for 5 consecutive days. 2/ Acreage in the country seeking to apply the snapback cannot, in the year of application, be above the previous 5 year average.

The snapback tariff, of course, can only be snapped back where a tariff already exists. Once a country has determined an import pricing problem, it then must notify the other party and give it two working days (not growing - weekends & holidays are not considered government working days) before implementing a snapback tariff. Once the import price moves above the 90% "trigger", the snapback is removed and cannot be reapplied until the next marketing season.

Given the 90% "trigger" import price, it provides somewhat less protection than is currently available. ie. The current tariff is applied even if the price goes up. Given the acreage requirement, it limits the potential use of this mechanism. Given the data requirements, it may well be that the data needed to justify the application of the snapback may not be available when attempting to defend its use with the affected trading partner. This is good news if you don't want a snapback applied against your exports, this is bad news if you want to use the snapback against imports. Finally, the administrative guidelines as currently provided for under the CUSTA makes the snapback not extremely time responsive.

Over the course of the last two years, the Canadian Horticultural Council has witnessed several situations where the snapback has been considered for use on imported fresh fruits and vegetables, from the United States. These are:

1990

Asparagus - Snapback applied.
Tomatoes - Snapback not applied. Although import prices fell below the "trigger", the acreage criteria did not make it eligible.

1991

Peaches - Snapback applied.
Cabbage - Snapback not applied due to acreage criteria.
Lettuce - Snapback not applied due to acreage criteria.
Broccoli - Snapback not applied due to acreage criteria.
Cauliflower - Snapback not applied due to acreage criteria.
Tomatoes - Snapback applied.
Green onions - Snapback not applied.
Prune Plums - Snapback not applied.

In 6 situations where the import prices had fallen, seriously in some cases, the snapback could not be used, thus negating its value as an import "protective" mechanism. The purpose of this explanation is simply to allow interested parties to understand the mechanism, its failings or strengths, depending on your perspective. As well, it is somewhat timely in light of the ongoing negotiations under NAFTA (North American Free Trade Agreement).

As well, snapback alone provides only a limited amount of protection for marketing situations where there is a collapse in prices. Reprinted below is a summary of what actually occurred with 1990 asparagus:

Fresh Asparagus

<u>Year</u>	<u>Month</u>	<u>Aver. Import Price (cents/lb.)</u>
1. 1985	May	85.9
2. 1986	"	92.8
3. 1987	"	71.8
4. 1988	"	92.0
5. 1989	"	87.3
1987-89 Average (85%) =		71.1 Trigger Price
1985-89 Average (90%) =		77.4 Trigger Price

The trigger price for the 1990 asparagus crop was 77.4 cents/lb.

Import asparagus prices began as low as 30 cents/lb. at the start of the season. By the time the snapback was applied they had increased to 55.9 cents/lb. In 1990, the effective rate of tariff on U.S. asparagus was 12% (versus 15% before the CUSTA). When the snapback

went on, it provided a 3% x 55.9 cents/lb. (import price), or 1.68 cents/lb. thus increasing the import price from 55.9 cents to 57.58 cents. ie. very little protection when the previous year import prices were 87.3 cents/lb. The point being a snapback tariff cannot address this type of pricing problem.

Summary:

The snapback as an effective replacement to tariff protection has limitations as it is currently written under the CUSTA. In reality, it is also expensive and difficult to monitor; likely the cost of this exceeds any potential benefits it provides. For import pricing problems (eg. distressed priced situations), it is even less effective where prices can drop dramatically - a not common, but a reoccurring periodic problem for Canadian producers when faced with U.S. competition in the Canadian domestic market.

For such latter situations, currently there exists a special surtax mechanism (under Article XIX of the GATT - Safeguard Provisions), available for use in Canada. It has, in practice, only been used once (on onions). Although it has been triggered on a number of occasions, the Canadian government has not implemented it. The reason for this is the U.S. government has not recognized it as a legitimate safeguard mechanism under Article XIX and demanded compensation from Canada the one time we used it. The following explains how it is used:

Taking 1990 asparagus as an example, the 3 Year moving average price was 71.1 cents/lb; the 5 year moving average was 77.4 cents/lb. The surtax "trigger" would be 77.4 cents/lb., which is the higher of the two. In 1990, the import price was 55.9 cents/lb.; the surtax would be the difference between the trigger (77.4) and the import price (55.9), or 21.5 cents/lb. If you compare this to the snapback of 1.68 cents/lb.; the obvious benefits of the surtax are obvious for the producer. Its other benefits are that it does not require massive administrative costs as it is based on import price declarations - it will require some auditing! It also need not be annual as it is only triggered when prices go below a prescribed formula. In the Canadian situation with onions, a review since 1979 shows it "might" have been triggered twice. Unlike anti-dumping duties which can run for years, it need not be in place annually. It is also inexpensive for producers (unlike dumping) if they are seeking fast relief.

Its limitations include the fact that it is not based on the previous year prices, therefore, will provide somewhat less protection than some may want. If used several years in a row, the trigger price reduces in absolute terms. It will not perpetuate or sustain a sector from an area with true comparative advantage. Also, as the onion surtax demonstrated, it will not keep onions out; what it will do is increase the return for onion exporters to Canada. Some of these limitations vis a vis imports are likely seen as strengths by the exporters who may not like the idea at all.

The reason for explaining this mechanism is to advise interested parties of an alternate mechanism which might well serve the Canadian producer community far more effectively than a snapback. Given the current NAFTA negotiations, it may be of interest to the U.S.

industry. As with Canada, the United States, and Mexico have to look at it from an import and export perspective; recognizing what is sauce for the goose is sauce for the gander. Were such a mechanism in place under the NAFTA, while the U.S. import sensitive sectors could apply it against Canada and/or Mexico; the reverse is true as well. The true value of the surtax is that it will provide fast, easy to administer and relatively effective relief from disastrously priced imports. For the economists and consumers, it will not shield a high cost sector from true comparative advantage, nor will it gouge consumers, as for it to be applied, import prices do have to be experiencing a decline, above 10%.

Henceforth, given the negative connotations associated with the term surtax, we propose to now refer to it as the Perishable Horticultural Safeguard Relief Mechanism.

Summation:

The snapback should be eliminated under the NAFTA, but only on the basis that it is replaced by an effective Perishable Horticultural Safeguard Relief Mechanism. The PHSRM mechanism should have the following conditions:

- 1/ It operates on import price information eg. as indicated on the confirmation of sale form.
- 2/ The trigger price should be based on 90% of the previous three year monthly moving average import price.
- 3/ The PHSRM should be triggered after two consecutive days of "significantly" depressed import prices. eg. well below the three year moving average. The mechanism should not require prenotification to the affected trading parties.
- 4/ The PHSRM will be removed after five consecutive days of import prices above the trigger price. This will provide greater assurance that the exporters do not manipulate prices.
- 5/ The PHSRM can be used a maximum of once per calendar year in each recognized tariff zone; it could be used annually.
- 6/ There should be no acreage criteria in the formula.
- 7/ There should be a trilateral review group which annually assesses the appropriateness of surtax actions and awards compensation where the PHSRM has not been justified.
- 8/ There should be no injury test required.
- 9/ Governments must ensure that any application of the PHSRM is implemented on a trilateral basis such that there is no potential for the import pricing problem to be transferred the third signatories' marketplace.

These are similar principles that could be used from a GATT perspective.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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Outlook '92

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THE U.S. PRODUCE INDUSTRY AND THE NORTH AMERICAN FREE TRADE AGREEMENT

Patrick Hanemann
Vice President, Sales & Marketing
Dole Citrus

In addition to my responsibilities with the Dole Food Company, I also serve as Chairman of the International Trade Committee of the United Fresh Fruit and Vegetable Association. It is in this latter capacity that I will speak to you this morning, and the balance of my opening comments will be drawn from testimony on NAFTA which the UFFVA has given to various agencies and committees over the past year.

The United Fresh Fruit and Vegetable Association is the national trade organization representing all sectors of the fresh produce industry. Founded in 1904, its 2,100 member companies represent grower/shippers, brokers and agents, truckers, wholesalers, retailers, importers, exporters, and foodservice operators. Our members are responsible for the production and distribution of some 80% of the fresh produce marketed in the U.S., and are actively involved in all aspects of the global fresh produce business.

Our comments here are based on United's 7th Annual International Trade Forum, a day long meeting of over 200 produce industry leaders, devoted entirely to the discussion of the impact of NAFTA on the produce industry. The program included respected and knowledgeable industry leaders from regional and commodity organizations, and influential government officials such as Dr. Hermilio Blanco (Mexico's Chief Negotiator), Commissioner Seeley Lodwick (U.S. International Trade Commission), and Chairman Kika de la Garza (Committee on Agriculture, U.S. House of Representatives). After a full day of informative speeches, rousing debate sessions, and formulative discussion forums, attendees from all sectors of the industry were able to provide United with the basis of an industry-wide platform. What I present to you today is a concise version of those initial issues put together directly from our industry leaders at the February meeting.

Fresh fruits and vegetables are distinct from most other agricultural and industrial products. They are highly perishable and highly seasonal. These two characteristics make it compelling for the USTR and the U.S. North American Free Trade Agreement

(NAFTA) negotiating team to give special and earnest consideration to the impact such an agreement can have on this highly diverse and competitive industry -- which contributes about \$65 billion to the U.S. Gross National Product every year. The decisions made in negotiations can have enormous consequences for the domestic industry and the U.S. food supply.

Further, we point to the disparity in the degrees of economic development between the United States and Canada and Mexico. The great success of the U.S. economy has created enormous wealth. One consequence of this wealth is a high degree of sophistication and costly regulation at federal, state, and local levels - placed upon private businesses in every area pertaining to the conduct of business: labor, environmental quality, health and safety standards, housing, transportation, law enforcement, immigration -- not to mention high levels of taxation.

These three factors: perishability, seasonality, and high costs of doing business in a fully developed economy, exert a unique impact upon the fresh fruit and vegetable industry in the United States. They compel special and earnest consideration by the USTR as it undertakes the NAFTA negotiations. These three special factors constitute the rationale for the positions UFFVA and other fresh fruit and vegetable organizations take on NAFTA.

Here are the subjects and suggested positions on which the United Fresh Fruit and Vegetable Association believes the U.S. negotiating team should base its efforts, as they pertain to fresh fruits and vegetables.

Tariffs - We support different time frames to phase out tariffs for commodities of differing sensitivity to imports. Crops produced during the same growing seasons as Mexico tend to be import-sensitive and include commodities such as tomatoes, peppers, cucumbers, onions, mangoes, and squash. We urge that they be given a long adjustment period (such as 20 years). Most tariffs on non-sensitive crops may be eliminated in a shorter period of time. Nineteen principal Mexican horticultural exports are subject to U.S. ad valorem equivalent tariffs.

Transition periods - Sufficient phase-in periods are necessary in order to avoid dislocations of commodities which are import-sensitive. For those import-sensitive commodities we again urge periods longer than those in the U.S.-Canadian FTA (from 10-20 years).

Safeguard mechanisms - Special mechanisms which will allow temporary reimposition of duties and other restrictions are necessary to prevent isolated cases of injurious increases in imports. Due to probable absence of adequate 5-year data, snap-back provisions should be based on a shorter time period for which data is more reliable (perhaps 3-year).

Phytosanitary and residue standards - Health and residue standards should be based on science and not on economics or politics. The U.S. government has established procedures which ensure the safety of both imported and domestic fresh fruits and vegetables. The U.S. imports approximately 34 billion pounds of fruits and vegetables annually. The U.S. government must maintain and strengthen these programs to make certain imported produce meets those standards which the U.S. has established.

Such standards are necessary to ensure consumer confidence, and to protect U.S. plants from disease and pests which have been eradicated, or have never been found, within U.S. borders. The difficulties surrounding the spread of the Mediterranean and Mexican fruit flies certainly attest to the need for the U.S., Mexico, and Canada to work together to control and eradicate pests. According to James Glosser, administrator of the U.S. Department of Agriculture's Animal and Plant Health Inspection Service, potential losses to U.S. farmers and consumers could run as high as \$831 million a year if the Medfly were to become established in the continental United States.

If the U.S. is to take advantage of exporting to Mexico under a trade agreement, then Mexico must reveal its sanitary and phytosanitary regulations. Mexico has all the information necessary to export to the U.S., whereas Mexican regulations are a "blank book." U.S. businesses need access to the information on health and chemical residue standards that accompany imported produce. The evasive regulations and procedures which inhibit produce trade into Mexico must be clarified and made available to U.S. exporters.

Import licensing - We urge the Administration to negotiate the elimination of Mexico's remaining import license requirements. Import licensing prevents fair access for many producers of fruits and vegetables to the Mexican market. In 1990, 57 agricultural commodities were subject to Mexican import licenses, five specifically aimed at fresh fruits and vegetables. At least with tariffs, the "rules of the game" are known, but the issuance of import licenses remains a mystery to many in the U.S. fresh fruit and

vegetable industry. Import licensing especially affects those producers of tree fruits, i.e. apples, grapes, peaches, pears. Many times it functions as an import ban -- that is the case for apples.

Transportation - U.S. trucks must be allowed to operate in Mexico, just as Mexican trucks are already allowed entry into the U.S. within a designated border area. The industry should be deregulated to promote fair competition. Truckers should meet safety and other requirements imposed by the country in which they are operating, regardless of their origin. There should also be an agreement between the three countries to ensure that drivers are properly trained, licensed, and understand and observe safety regulations.

Disparity of regulations - While we recognize Mexico's sovereignty, it is also true that the significantly greater number of government regulations placed on the U.S. produce industry as opposed to Mexican producers will create a significant competitive advantage for the Mexican industry. Regulations such as minimum wage, worker health and safety, pesticide training and registration, etc. all increase the cost of production in the U.S. Many of the Florida winter vegetable producers fear that if such disparities are not addressed, they will be put out of business.

The main sources of U.S. supply in percentage for three major vegetable crops are:

	Calif.	Florida	Mexico	
Tomatoes	24%	41%	21%	
Cucumbers	11%	28%	26%	
Bell Peppers	22%	33%	20%	

The statistics show that these commodities are very competitive. Even a small cost variation can make a big difference.

Rule of origin - Mechanisms to prevent transshipment/import substitution from any fourth country through the NAFTA countries is essential. Strict country of origin restrictions must be included in any NAFTA and enforced. Unfortunately, the lack of information and documentation on the Mexican produce industry makes this a difficult task. Adequate agricultural statistics, such as production, consumption, import and export figures, are needed in order to implement any rules of origin as well as many of the

other above mentioned provisions.

Property rights - While progress has been made outside NAFTA negotiations, intellectual property rights specifically regarding agriculture and the produce industry are needed to protect varieties of seeds, plants, the development of new strains, etc.

Labor - Any FTA should continue to ensure that U.S. producers of perishable commodities have a viable workforce. Foreign agricultural labor programs that allow for the legal admission of foreign workers in the event of demonstrable shortages of domestic workers in agriculture should be continued. Since production of fruits and vegetables is so dependent on the workforce, any disruption in labor supply would be detrimental to the U.S. industry.

Dispute settlement - A reliable system for accelerated settlement of disputes between the three NAFTA countries must be created.

Worker adjustment programs - Adjustment assistance for dislocated U.S. workers in the produce industry should be provided in a comprehensive and timely fashion.

Dumping standards - Dumping standards and the procedure by which dumping is determined should be uniform throughout the U.S., Canada, and Mexico.

Marketing orders - U.S. marketing orders ensure the consumer the highest quality produce and should not be negotiated. U.S. negotiators should differentiate grade and quality standards from other marketing-order functions in the trade talks. Producers from all three countries benefit from U.S. marketing orders since they help develop markets for both domestic and imported produce.

Because of the unique perishable and seasonal nature of fruits and vegetables and the U.S. industry's economic sensitivity to any free trade agreement, NAFTA should contain a specific chapter relating to fruits and vegetables. The fresh fruit and vegetable industry is a competitive, global industry. We urge that a high priority be placed on negotiating terms and policies which will allow for more export opportunities for the U.S. produce industry. If some sectors of the fresh fruit and vegetable industry are asked to conduct business without the benefit of the limited tariff and non-tariff barriers now in place, they must be assured of changes in global trading policies that will result in new markets abroad.

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ECONOMIC STATUS OF RURAL OLDER AMERICANS

F. N. Schwenk
Research Leader
Agricultural Research Service
Family Economics Research Group

Introduction

Not only are rural households an important share of the elderly population, economic components such as income and prices may differ between rural and urban areas. Thus, this study compares the economic status of rural and urban older households using selected measures, principally income and consumer expenditures.

Source of Data

Data for this study are from the interview component of the 1989 Consumer Expenditure Survey (CE), conducted by the Bureau of the Census for the Bureau of Labor Statistics (BLS). The CE is an ongoing survey that collects data on household expenditures, income, and major socioeconomic and demographic characteristics (5,6). A national sample of consumer units¹ is interviewed once each quarter for five consecutive quarters; the first interview is not used since it is collected only for bounding purposes. Using a rotating sample design, about one-fifth of the sample is replaced each quarter. The 1989 CE, with a response rate of 86 percent, contains information from about 20,000 quarterly interviews. Income data are annual and quarterly expenditure

¹A consumer unit consists of either: (1) all members of a particular household who are related by blood, marriage, adoption, or other legal arrangements; (2) two or more people living together who pool their incomes to make joint expenditure decisions; or (3) a person living alone or sharing a household with others or living as a roomer in a private home or lodging house or in permanent living quarters in a hotel or motel, but who is financially independent. To be considered financially independent, at least two the three expense categories (housing, food, and other living expenses) have to be provided by the respondent. In this paper, consumer units may be referred to as households.

data are multiplied by four to provide estimates of annual expenditures. The data can be weighted to represent the U.S. noninstitutionalized population.

For this study, consumer units with a reference person² who was 65 years or older were selected. Of these 4,125 units, 573 were rural and 3,552 were urban households. Rural was defined as an area with a population of less than 2,500 persons and outside a Metropolitan Statistical Area (MSA). The urban population was defined as all persons living in a MSA and in urbanized areas and urban places of 2,500 or more persons outside of MSA's. Urban, as defined in the CE Survey, included the rural population within MSA's.

Descriptive data reported in this paper were weighted to represent the U.S. population of interest. Of the 20.3 million consumer units with a head 65 years or older, 3.7 million units, or 18 percent, were rural. For the analysis of income, only units with complete reporting were used; 89 percent were considered by BLS to be complete reporters.³

Characteristics of Rural Older Households

There were similarities between rural and urban older units in household size and the age of the household head. Marked differences were observed, however, in household type, housing tenure, income class, education, and race.

Household Size

Household size is often an important factor in assessing income and expenditures of a household but household size was similar for rural and urban older households--1.8 members. Also, the number of people in the household who were 65 years or older was similar--1.4 older persons. Thus, household size does not appear to be a contributor to income or expenditure differences.

Age of Household Head

The average age of household heads was 74.5 years for rural heads and 73.7 years for urban heads. Although the average age seemed similar, the distribution among age categories showed differences. A smaller proportion of rural than urban household heads were ages 65-69 and a larger proportion were ages 75-79 (table 1).

²A reference person is identified by the respondent when asked "to start with the name of the person or one of the persons who owns or rents the home." In this paper, reference person may be referred to as household head.

³Complete income reporters are respondents who provide values for major sources of income such as wages and salaries, self-employment income, or Social Security income. Even complete income reporters may not have provided a full accounting of income from all sources.

Household Type

Household composition was different in rural and urban households. Over half (53 percent) of rural older households had a husband and wife, a higher percentage than in urban older households (44 percent). In contrast, a lower percentage of rural households were single female households (28 percent compared with 33 percent of urban households). Perhaps single females from rural areas have moved to more urban areas.

Housing Tenure

Rural households were more likely than urban households to own their house, 88 percent compared with 74 percent. Older urban households (17 percent) were more likely than rural households (11 percent) to have a mortgage. Only 12 percent of rural households rented their homes, whereas 26 percent of urban households were renters. Because housing prices vary between rural and urban areas, home ownership does not necessarily indicate relative wealth.

Income Class

Almost two-thirds of the rural elderly reported household income less than \$15,000, as did almost half of urban households. The modal category for both groups was \$5,000 to \$9,999. Thirty-five percent of rural households and 23 percent of urban households reported incomes in this range.

Education

Rural household heads were less educated than urban heads. Two-thirds had not graduated from high school, and almost half had not even attended high school. Of urban heads, almost half had not graduated from high school, and over a quarter had not attended high school. The lower education level of rural persons probably affected their work experiences and, consequently, their present income.

Race

Older Black households were less likely to live in rural areas than in urban areas. Only 4 percent of the rural elderly were Black, compared with 10 percent of the urban elderly. This reflects the migration of Black households to urban areas after 1940 and the mechanization of southern farming (2).

Earners

Over one-fifth of rural household heads age 65 or older were employed. In over one-third of the households, someone (head, spouse, child, or other resident) was employed. Urban households were slightly less likely to have an employed member.

From this overview of demographic and socioeconomic characteristics, it might be expected that rural older households would have higher incomes than their urban counterparts. Except for education, those characteristics usually

associated with higher incomes were more prevalent among rural households: husband/wife households, homeowners, White, employed head. Yet, as shown by the income categories in table 1, the income of rural elders was lower than the income of urban elders.

Income Sources

For those households considered complete reporters of income, average before-tax income of rural older households was \$15,367, compared with \$20,422 for urban older households. Thus, rural before-tax income was 75 percent that of urban households (table 2 and chart 1). Rural households paid less in income taxes; mean after-tax income was 78 percent that of urban households. Also, the sources of rural income were different from those of urban households (4).

Social Security and Railroad Retirement

There was not much difference between rural and urban households in dollar income received from Social Security and Railroad Retirement. Rural households received \$7,595; urban received \$8,019. Thus, rural households received, on average, 95 percent as much as urban households. However, Social Security and Railroad Retirement provided 50 percent of rural household income (figure 1), compared with 39 percent of urban household income (figure 2). Nearly all (98 percent of rural and 94 percent of urban) households received this income.

Pensions and Annuities

Rural households received about two-thirds as much as urban households from pensions and annuities. This probably reflects the work histories of these households. Rural persons may have been farmers, self-employed, or employed in small businesses--jobs where pensions and retirement plans are less prevalent than those with larger companies that frequently are located in urban areas. Thirty-two percent of rural households received pension or annuity income, compared with 42 percent of urban households.

Earnings

Rural elders earned about two-thirds as much as urban elders from employment, farm income, business income, and rental units. The average income from farms was \$950 in rural households; urban households reported -\$11 farm income, indicating a loss. Rural elders had an average of \$171 income from business, compared with \$830 for urban elders. And, even though rural households were slightly more likely to have someone working, their employment income averaged only \$1,969, half that of urban households (\$4,203).

Interest and Dividends

The interest from savings and dividends from investments received by rural older households was less than two-thirds that received by urban households. This indicates that rural households had fewer assets in savings accounts, bonds, stocks, and other investments. Thirty-eight percent of rural

households reported interest or dividend income, compared with 43 percent of urban households.

Expenditures

Average expenditures for rural older households were \$14,815, compared with \$18,250 for urban older households (table 3 and chart 2). Rural expenditures were 81 percent of urban expenditures. If prices were the same in rural and urban areas, it would appear that rural households were living less well than urban households. However, prices are not likely to be the same. Some goods and services may be more expensive in rural areas, and some may be less (3).

Another indicator of relative well-being in rural and urban households is the proportion of income that they spend. For rural households, expenditures were 99 percent of their after-tax income; for urban households, it was 95 percent. Rural older households were spending, on average, nearly every dollar of income. But, these were mostly retired households, so it would not be surprising if they were spending all their income or even drawing from their reserves. The fact that, on average, rural households were not spending more than their income indicates that they were willing to live within that income and that they either lacked liquid assets or refrained from consuming them. Also, since these are averages, some households were spending more than their income.

Housing

Housing accounted for 31 percent of rural households' expenditures (figure 3) and 33 percent of urban households' (figure 4). The primary components are shelter and utilities. Shelter includes mortgage interest, property taxes, maintenance, repairs, insurance, and other expenses for owners. For renters, it includes rent, some repairs, tenant's insurance, paint and similar items. Shelter costs in rural areas were \$1,917, 61 percent as much as in urban areas. Utilities were \$1,665 for rural households and accounted for 11 percent of rural households' expenditures. Although urban households spent a similar amount (\$1,719) for utilities, the expenditure share was 9 percent. Differences between rural and urban households for furniture and equipment or household operations were small.

There are several reasons why rural households spend less on housing than urban households. Prices may be less and more rural households own their home without a mortgage. Also, the quality of housing may be lower. In 1979, 15 percent of U.S. rural elderly heads of household lived in inadequate housing, compared with 8 percent of urban elderly (1).

Food

Food expenditures of rural households were 88 percent those of urban households. For both groups, food was one-fifth of their budget. Food at home expenditures are considered to be inelastic; thus, it is not surprising that rural households spent almost as much as urban households. However, the difference was greater for food away from home. Rural households spent 94

percent as much as urban households for food at home and 69 percent as much for food away from home.

Transportation

Rural older households owned more vehicles (1.7) than older urban households (1.4). Rural households apparently drove more miles since they spent considerably more for gas and oil. However, their total transportation cost was 85 percent that of urban households. They spent less on new cars and trucks and on public transportation, which included air travel. For both rural and urban households, transportation was about one-fifth of their budget.

Health

The only category in which rural households spent more than urban households was health expenditures. Rural households spent \$2,060, or an average of \$34 more than urban households. This was 14 percent of their budget, compared with 11 percent for urban households. Because rural and urban households were similar in age, health needs might be expected to be similar.

Further analysis of medical costs showed that rural households spent more on health insurance (\$272 for rural and \$229 for urban households). Rural households spent an average of \$101 on Medicare; the rest was for Medicare supplemental insurance or insurance for other household members. Health insurance expenditures may be larger for rural households because they were more likely to have been self-employed or employed by small firms where health insurance was not included as part of the retirement benefits.

Other Expenditures

Expenditures of other goods and services are shown in table 3. In all of these categories, rural older households spent less than urban households. They spent slightly less on entertainment and much less on cash contributions, alcohol, reading materials, and apparel.

Analysis

The income of rural older households was 75 percent that of their urban counterparts; rural expenditures were 81 percent of urban expenditures. Although many of the characteristics of rural households, such as the preponderance of married couples, suggested higher income than urban households, this clearly was not the case. Rural households were less educated. Perhaps this resulted in jobs that were lower paying and with fewer retirement benefits, thus indirectly yielding less income in these later years. This question was addressed by a multivariate technique. The socioeconomic characteristics described earlier and shown in table 1 were used in two regression analyses to determine their relationship with before-tax income and

total expenditures.⁴ Unweighted data were used; only complete reporters of income were used for the income regression. Results are shown in table 4.

The coefficients shown for each regression indicate the dollar difference in income or expenditures that households of that type would have, compared with the reference (or omitted) category. (For example, the predicted income of households with husband, wife, and others would be \$5,096 more than the income of husband/wife households.)

As shown, the predicted income of older households in rural areas was \$4,604 less than that of older households in urban areas. Expenditures were \$2,475 less. These differences occurred when other socioeconomic characteristics-- education, as well as household type, housing tenure, age, race, earning reference person--were controlled, reflecting the unique contribution of rural status to the prediction of income or expenditures.

Summary and Conclusions

Consumer expenditures by rural elders were less than that by urban elders. There were several reasons.

First, rural elders had less income than urban elders. Even when socioeconomic characteristics such as education and household type were held constant, rural household incomes were less than urban household incomes.

Second, prices may be less in rural areas, at least for some items. It is widely believed that housing prices are lower in rural areas. The market value of owned houses in this study averaged \$55,696 for rural households and \$91,799 for urban households. However, differences in prices of such commodities and services as health care, automobiles, or food cannot be easily verified.⁵ For goods and services where rural prices are similar to urban prices, rural elders consume less quantity and/or quality than urban elders.

Third, standards may be different. Some have the perception that rural elders prefer a simpler life style with less emphasis on consumption. This study does not address the topic of standards. It does indicate, however, that rural elders are, on average, spending all of their after-tax income.

⁴Variables were coded as shown in table 1 except age was a continuous, not categorical, variable. The omitted category for education was coded as less than a high school education, and income categories were not included since the dependent variables were income and expenditures.

⁵The Federal Government does not publish statistics that compare prices among cities, regions, or rural areas; the Consumer Price Index measures changes in prices since the base period for each selected city, not differences among cities.

Implications

Findings indicate a need for preretirement education for rural households. The pension and annuity income of rural elders was considerably less than that of urban elders; they may not have had access to company-sponsored retirement plans. Also, income from interest and dividends was much lower, indicating less savings.

It is important to note, however, that people retiring in the future may be different from the cohort reported here. People in this study were born in the first quarter of the century. The inclusion of farmers in Social Security, the growth of company-sponsored retirement programs, and similar events came fairly late in their work life. Future cohorts may have more preretirement training and more access to company-sponsored retirement plans, but it is not clear that they have the "savings ethic" that today's older households had.

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Table 1. Characteristics of rural and urban consumer units, reference person 65 years or older, 1989

Characteristics	Rural	Urban
Percent		
Household type		
Husband/wife only	48	36
Husband/wife and others	5	8
Other families	8	12
Single male	11	11
Single female	28	33
Housing tenure		
Homeowner with mortgage	11	17
Homeowner without mortgage	77	57
Renter	12	26
Income class		
<\$5,000	7	7
\$5,000 - \$9,999	35	23
\$10,000 - \$14,999	20	17
\$15,000 - \$19,999	9	12
\$20,000 - \$29,999	10	13
\$30,000 - \$39,999	4	7
\$40,000 +	6	10
Incomplete reporter	9	11
Reference person		
Age		
65 - 69	27	33
70 - 74	26	26
75 - 79	26	20
80 +	21	21
Education		
Elementary (1 - 8)	44	27
Some high school	23	17
High school graduate	18	27
Some college	9	15
College graduate	2	7
>4 years college	4	7
Race		
Black	4	10
Earners		
Reference person employed	22	20

Table 2. Mean Income of rural and urban consumer units,¹ reference person 65 years or older, 1989

Income and income sources	Rural	Urban	Percentage: Rural/Urban
Before-tax income	\$15,367	\$20,422	75
After-tax income	14,950	19,159	78
Social Security and Railroad Retirement	7,595	8,019	95
Pensions, annuities	2,469	3,636	68
Earnings	3,215	5,278	61
Interest dividends	1,856	2,990	62

¹Consumer units with complete reporting of income.

Table 3. Expenditures of rural and urban consumer units, reference person 65 years or older, 1989

Expenditure	Rural	Urban	Percentage: Rural/Urban
Total expenditures	\$14,815	\$18,250	81
Housing	4,559	5,975	76
Shelter	1,917	3,163	61
Utilities	1,665	1,719	97
Furniture and equipment	696	639	109
Household operations	281	455	62
Food	2,959	3,377	88
Food at home	2,370	2,521	94
Food away from home	588	856	69
Transportation	2,757	3,253	85
Vehicle purchase	1,109	1,403	79
Gas and oil	736	576	128
Other vehicles	829	986	84
Public transportation	84	287	29
Health	2,060	2,026	102
Entertainment	620	687	90
Apparel	503	731	69
Retirement programs	319	511	62
Life insurance	223	302	74
Personal care	175	227	77
Reading and education	124	213	58
Tobacco	116	157	74
Cash contributions	108	321	34
Alcohol	67	136	49
Other	226	334	68

Table 4. Regression results for income and expenditures of consumer units, reference person 65 years or older, 1989

Characteristic	Coefficients ¹	
	Before-tax income	Expenditures
Household type (husband/wife) ²		
Husband, wife, and other	\$ 5,096	\$ 4,589
Other families	-2,261	-2,534
Single male	-5,146	-5,784
Single female	-10,966	-8,761
Housing tenure (rent)		
Own with mortgage	6,542	4,222
Own without mortgage	4,716	1,854
Age	NS	-148
Education (< high school)		
High school graduate	3,592	2,732
Some college	9,878	7,222
College graduate	16,654	14,425
Race (non-Black = 0; Black = 1)	-3,919	-4,011
Earners (reference person earns = 1)	8,687	3,434
Rural/urban (urban = 0; rural = 1)	-4,604	-2,475
Constant	14,642	26,755
R ²	.25	.20

¹All variables significant at $\leq .05$ except age in the income regression.

²Omitted category in parentheses.

Figure 1. Sources of income of rural consumer units, age 65 or older, 1989

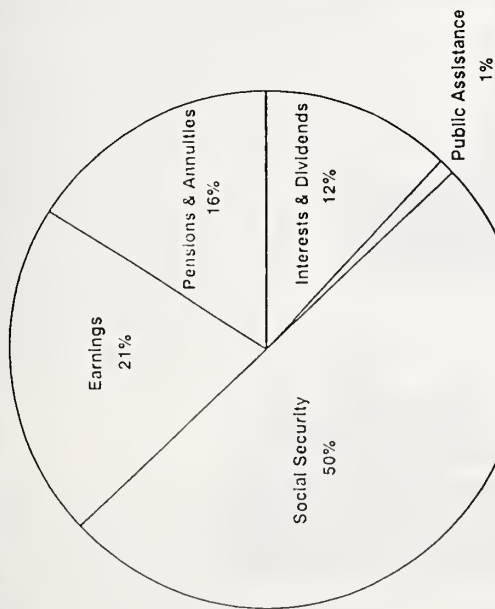


Figure 3. Expenditure allocation of rural consumer units, age 65 or older, 1989

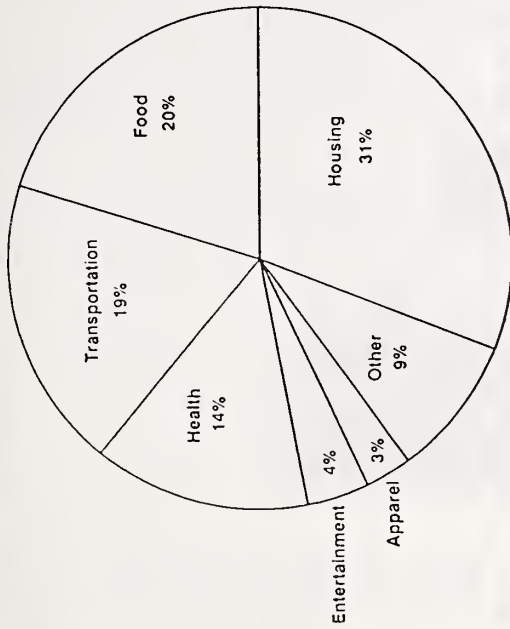


Figure 2. Sources of income of urban consumer units, age 65 or older, 1989

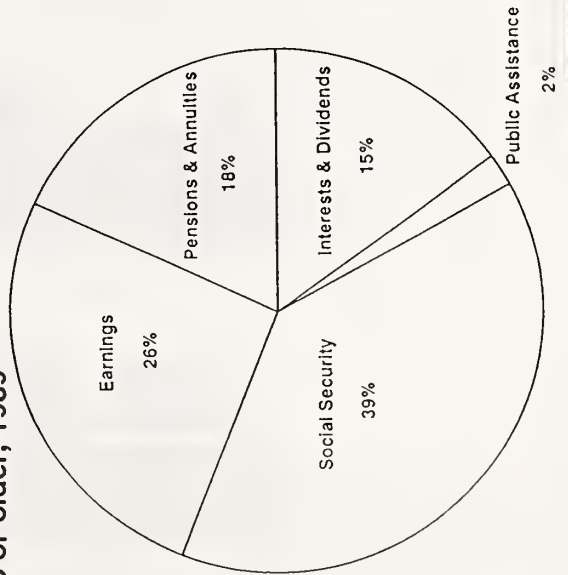


Figure 4. Expenditure allocation of urban consumer units, age 65 or older, 1989

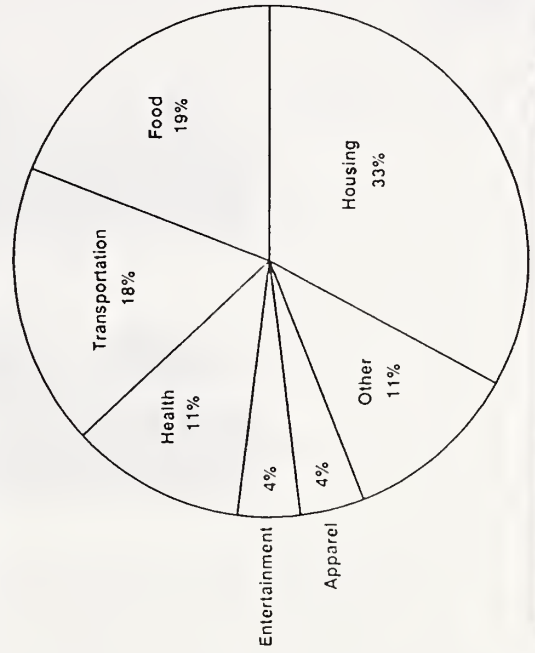


Chart 1

Income

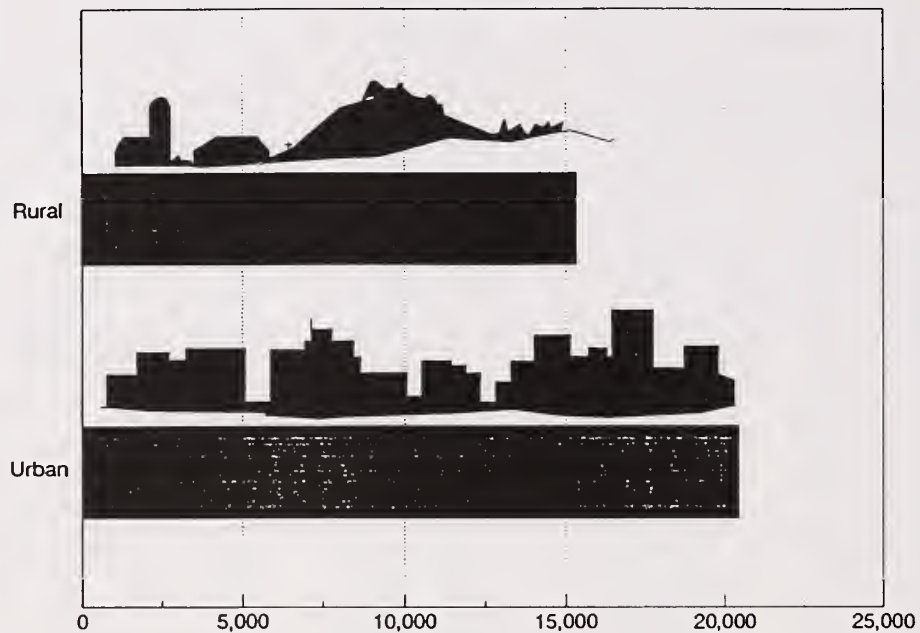
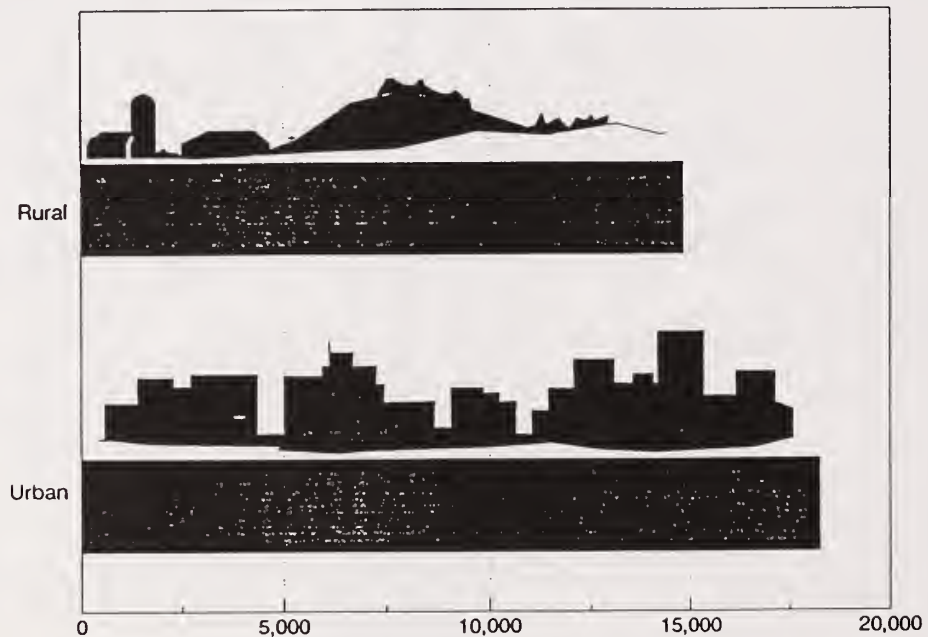


Chart 2

Expenditures





Outlook '92

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**PERCEPTIONS OF WELL-BEING AMONG THREE AGE COHORTS
OF RURAL SOUTHERN ELDERS**

Julia M. Dinkins
Consumer Economist
Agricultural Research Service
Family Economics Research Group

Introduction

In 1989, about 66.2 million people, or 27 percent of the U.S. population, resided in rural¹ areas. The South had the largest share of the Nation's rural residents, 28.9 million or 43.6 percent. Twelve percent of the residents in rural areas were 65 years or older (15).

Over 15 percent of the elderly population in rural areas were living in poverty. More than 30 percent of the rural poor who lived alone were elderly women (14). Indeed, women who were 65 years or older who lived alone tended to be less well off economically than married couples or women who lived with other family members (12).

As the U.S. population ages, more pressure may be placed on public and private support networks to help elders cope with demands of life and to maintain desired levels of well-being. It was predicted that the need for long-term community and nursing home services will increase. However, the greater demand will be for community services such as Meals on Wheels, Older Americans Transportation Services, and in-home care assistance (3). Focusing on the dynamics between age and perceptions of well-being in the rural South will increase our understanding of elders' assessments of their everyday experiences as well as point out which support networks are most needed for older citizens in rural communities.

¹Rural areas, as defined in 1980, include open countryside and places with fewer than 2,500 residents that are not in urbanized areas (areas with a population concentration of more than 50,000 residents).

The purpose of this study is, therefore, to determine differences in perceptions among three age cohorts of rural southern elders on five well-being dimensions: overall, independent living, social interactions, economic status, and psychological status.

Source of Data

The data for this study are from "Quality of Well Being of the Rural Southern Elderly: Food, Clothing, Shelter," a regional research project.² To identify rural counties and enumeration districts, 1980 U.S. Census population tapes and maps were used. From the list of rural counties,³ that is, those with no more than 30 percent urban population, six counties in each State were chosen using systematic random procedures based on the proportion of elderly population of each county. Each State had 60 sample units, each containing 5 elderly households. Using a list of the cumulative number of elderly persons in each enumeration district, the 60 sampling units were allocated to enumeration districts using sampling intervals of 1/60th of the total elderly population in the 6 counties. Equal probability of selection methods were used to determine sample cluster or sample unit starting points within the six counties of each State. The sample included 2,815 noninstitutional and ambulatory elders from rural counties in 10 southern States.⁴ The response rate was 94 percent.

Procedure and Instrument

Data were collected in face-to-face interviews from June of 1987 through November of 1988. The respondent was chosen based on the number of persons age 65 or older that lived in the household, the age of each elder in the household, and the number of elderly men residing in the unit. Since male respondents were expected to be predominant in married households with only one person over age 65, females were the respondents of choice (if present) in households with two or three elderly persons.

² Research reported here was supported by the Council of Home Economics Administrators, Association of Research Directors and the U.S. Department of Agriculture's Cooperative State Research Service (CSRS).

³All were nonmetro counties.

⁴States that participated in the regional project included Alabama, Arkansas, Georgia, Kentucky, Maryland, Mississippi, Missouri, South Carolina, Tennessee, Texas, and Virginia. For this study, Georgia was deleted because 40 percent of the sample for that State were not interviewed.

For this study, questions regarding life satisfaction and certain socio-economic and demographic characteristics were used. A 31-item instrument⁵ focusing on satisfaction was used in this research as a measure of perceived well-being. Satisfaction with life was used as the basis for determining perceptions of well-being because these perceptions are related directly to the level of satisfaction elders achieved as a result of their consumptive behaviors and to the physical and social characteristics of their environment (4). Respondents indicated levels of well-being by stating if they were very satisfied (5), satisfied (4), dissatisfied (2), or very dissatisfied (1). Also respondents indicated if an item was not applicable (3). Only respondents who answered at least 30 items on the instrument (89 percent of the sample) were included in this study. To ensure that persons who answered 30 of 31 questions were not penalized in the rankings, scores were averaged.

The instrument measures rural elders' well-being on the following dimensions: well-being related to independent living, social interaction, economic status, and psychological status. Overall well-being represents responses to all items. The independent living dimension determines how satisfied elders are with their ability to perform daily tasks or chores, solve problems, make decisions, and get around without assistance. The social interaction dimension highlights elders' contact with others--neighbors, family, friends--and involvement in religious, social, and community activities. The economic status dimension focuses on income, life savings, and money available for basic needs. The psychological status dimension deals with items such as retirement issues, life accomplishments, living arrangements, and spending time alone.

Cronbach's Alpha was used to determine instrument and dimension reliability. As a measure of internal consistency, alpha treated each item as a mini test and provided data on the correlation among items and on clusters of items that measured different attributes. If the correlation is relatively high, alpha will be close to 1.00. The further away alpha is from 1.00, the greater the likelihood of measurement error. A general formula is:

$$\text{Alpha} = \frac{k}{(k-1)} \times \left(1.00 - \frac{\sum \text{Var}(i)}{\text{Var}(X)} \right)$$

Where

K = number of items

$\sum \text{Var}(i)$ = the sum of the variance of the various item score distributions, and

$\text{Var}(X)$ = the variance of the distribution of test scores.

⁵The original instrument, developed for the regional project, had 32 items. The item, "How satisfied are you about the extent to which you are involved in other [activities]" was deleted because the respondents answered this item only if "other" activities were applicable.

The alpha coefficient for the overall instrument was high (.91) as were alpha coefficients for each dimension (.81 to .91) (table 1). These results suggest that 91 percent of the variance in overall scores and 91 percent to 81 percent of the variance in the scores on the dimensions were the result of true differences in perceptions among the elders. Thus, the instrument has the ability to yield consistent information on perceptions of well-being among rural elders.

Method of Analysis

Elders' scores were summed to provide scores on each dimension. The highest possible scores were 155 for overall well-being, 35 for independent living, 45 for social interaction, 30 for economic status, and 45 for psychological status. The lowest possible scores were 31 for overall well-being, 7 for independent living, 9 for social interaction, 6 for economic status, and 9 for psychological status.

Percentile scores indicated that half of the elders scored less than 122 on the overall instrument. On the dimensions, half scored less than 28 on independent living, 36 on social interaction, 24 on economic status, and 36 on psychological status.

The Kruskal-Wallis one-way analysis of variance was used to determine if mean ranks of summed scores for perceptions of well-being differed significantly among three age cohorts of rural southern elders. The Kruskal-Wallis test statistic was used because the measurement scale was ordinal, and there were three samples of different sizes from their respective populations.

With the Kruskal-Wallis procedure, observed data were ranked, average ranks were assigned to tied observations, and all data were summed to produce a final rank. Larger total ranks represent higher perceived well-being (6). Using reciprocals of sample sizes as weights, the Kruskal-Wallis one-way analysis of variance provides a weighted sum of squared deviations of ranked sums from expected sum of ranks (2).

Characteristics of Elders

Fifty-nine percent of the elders were ages 65-74; 33 percent were ages 75-84; and 8 percent were ages 85-106. Overall, 59 percent lived in rural farm or nonfarm areas, 81 percent were White or of other races or ethnic groups,⁶ 51 percent were widowed, and 50 percent had 1 to 9 years of education (table 2). Forty-five percent of all elders lived alone (figure 1). Forty-nine percent said their monthly incomes were below \$400, an amount that suggests these

⁶ Also included are Hispanics, Native Americans, and Asian Americans. These groups represented less than 1 percent of the sample.

elders probably met poverty guidelines,⁷ if they lived alone or had no other household income. Sixty-two percent of all elders said there was no spouse's income and less than 10 percent received income from others in the household. Monthly living expenses were less than \$600 for 71 percent of all elders.

Significant differences existed among age cohorts based on gender, marital status, educational level, living arrangements, household income (respondent or spouse), and living expenses. Contrary to expectations, the percentage of females in the oldest cohort, 74 percent, was smaller than that in the middle, 82 percent, and in youngest cohorts, 77 percent (figure 2). This likely reflects the sampling procedure that was designed to insure a representative number of males 85 years old or older.

A smaller percentage of the 65-74 age group were widowed (39 percent), compared with those ages 75-84 (65 percent) and 85 years and older (79 percent) (figure 3). Interestingly, slightly more of the middle cohort than youngest cohort attended college: 14 percent versus 13 percent. As might be expected, the oldest cohort was least likely to attend college (11 percent). The youngest cohort was more likely to live with family (including spouse) than older cohorts: 64 percent of the youngest, 42 percent of the middle, and 45 percent of the oldest cohort.

Sixty-four percent of the oldest cohort reported monthly incomes of less than \$400, in contrast with 50 percent of the middle cohort and 46 percent of the youngest cohort (figure 4). The percentage of elders who said there was no spouse's income increased as age increased: from 52 percent for the youngest cohort to 83 percent for the oldest cohort. These findings reflect the fact that people are more likely to be widowed as their age increases. The older the age cohort, the more likely monthly living expenditures were reported to be less than \$600. Walker and Schwenk (1991) found a similar pattern. Heads of households, ages 80 and over, reported lower per person expenditures than their 70-79 year old cohorts.

Perceptions of Well-Being

Overall. Mean ranks of summed scores for overall perceptions of well-being differed significantly among cohorts of rural elders ($p \leq .0001$) (figure 5). Mean ranks were derived by totaling each elder's mean score on the instrument, ranking all scores from the lowest (1) to the highest (2,815), then summing the ranks assigned to each cohort. Mean ranks on the overall instrument were 1,448 for the youngest cohort, 1,387 for the middle cohort, and 1,191 for the oldest cohort. As age increased, perceptions of well-being were less positive among rural elders.

⁷In 1987 weighted average poverty thresholds for those 65 years old and older were \$5,447 for one person and \$6,872 for two-person families. In 1988 the poverty thresholds were \$5,674 for one person and \$7,158 for two-person families with a householder 65 years old or older.

Independent Living. Mean ranks of summed scores for perceptions of well-being related to independent living decreased significantly ($p \leq .0001$) as age increased (figure 6). Apparently, older people in the rural South were less satisfied with their ability to perform daily tasks or chores, solve problems, make their own decisions, get around without assistance, and travel. Horowitz, Silverstone, and Reinhart (1991) found that elders perceived they needed assistance with daily tasks such as shopping, handling finances, travel to medical professionals, meal preparation, and taking medication. Data for the regional project from which this study was derived indicated the oldest cohort most often needed assistance shopping for food, followed by assistance shopping for clothes, housekeeping and money management, and cooking (5). Reschovsky and Newman (1990) found that when frail elders lack financial resources and informal support, their ability to cope with the requirements of daily living is compromised.

Social Interaction. Cohorts' mean ranks of summed scores for perceptions of social well-being differed significantly ($p \leq .0001$): mean ranks were highest for the youngest cohort and lowest for the oldest cohort (figure 7). Older cohorts of rural southern elders were less satisfied with the contacts they had with others. One-fourth of rural southern elders who were 85 years old or older said lack of a social life was a moderately serious or very serious concern. Less than one-fifth of those 65-84 years old held the same perceptions (5). As suggested by some researchers, positive social ties help elders buffer the impact of daily events on well-being (10).

Economic Status. As age increased, mean ranks of summed scores for perceptions of economic well-being increased ($p \leq .0016$) (figure 8). It appears that the oldest cohort was most satisfied with its present income, life savings, ability to meet personal and household expenses, and the amount of money it had to spend on clothing, housing, and food. Seccombe and Ishii-Kuntz (1991) found that a higher percentage of people age 85 and over than younger cohorts (ages 55-84) said money was not a concern.

Theoretical frameworks on stressful life events may suggest reasons why the oldest cohort was more satisfied with its economic status. The frameworks suggest (1) that changes in individuals' daily life events can cause adverse reactions, or (2) that individuals adapt to changes and adjust to their new circumstances (1,7). Conceivably, reactions to reduced or fixed incomes immediately after retirement may reflect dissatisfaction with perceived changes in lifestyles or expectations; then, as time passes, elders adjust to changes in their economic status (7). Another possibility is that the oldest cohort may receive or acknowledge assistance (financial, energy, home repairs) from family members or others and transfer payments (5).

Psychological Status. Although mean ranks of summed scores for psychological well-being decreased as age increased, this was the only dimension on which the three age cohorts did not differ significantly ($p = .0910$) (figure 9). Their perceptions about the time they spent alone, retirement issues, life accomplishments, living arrangements, and safety of their home did not differ significantly. Namazi, Eckert, Kahana and Lyon (1989) found that, among board

and care home⁸ residents, perceptions of physical health, comfort with the home and others, quality of interaction, and care providers' practices and policies influenced perceptions of psychological well-being. Okun, Melichar and Hill (1990) determined that negative daily events and social ties (positive and negative) were associated with psychological status among older adults. Both studies indicated that demographic characteristics did not influence perceptions of psychological well-being.

Further Analysis. In addition to the Kruskal-Wallis one-way analysis of mean ranks, one-way analysis of variance was used to compare differences in perceptions among cohorts. Tukey-B⁹ results indicated mean scores of the youngest and middle cohorts differed significantly from those of the oldest cohort on overall well-being. Mean scores of the middle and oldest cohorts differed significantly from those of the youngest cohort on perceptions of economic well-being. Whereas all cohorts held significantly different perceptions of well-being related to independent living and social interactions, none held different perceptions related to psychological status.

Conclusion

Findings from the Kruskal-Wallis analysis of variance by ranks suggests that mean ranks of summed scores for overall perceptions of well-being, as well as for perceptions of well-being related to independent living, social interaction, and economic status, differed significantly among age cohorts of rural southern elders. Perceptions of well-being related to independent living and social interaction declined as age increased, whereas perceptions of economic well-being increased as age increased.

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⁸These homes were characterized as predominately "single family units occupied by operators and their families. There was an average of 3.4 residents per home" (p. 513).

⁹ $P \leq .05$.

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Table 1. Percentile ranks and reliability coefficients¹ of scores on the well-being measure, 1987-88

Well-being dimensions	Number of items	Reliability ²	Percentiles			Range	
			25	50	75	Minimum	Maximum
Overall	31	.91	113	122	128	48	155
Independent living	7	.86	26	28	31	7	35
Social interaction	9	.84	34	36	39	13	45
Economic status	6	.91	18	24	24	6	30
Psychological status	9	.81	34	36	37	13	45

¹Adjustments were made so that respondents who answered 30 of the 31 questions were not penalized in her/his ranking.

²Cronbach's Alpha was used.

Sample size = 2,815.

Response categories: Very satisfied (5), satisfied (4), not applicable (3), dissatisfied (2), very dissatisfied (1).

Table 2. Socioeconomic and demographic characteristics of rural southern elders, 1987-88

Variables	Overall	Age			Chi square
		65-74	75-84	85-106	
		Percent			
Residence					9.32
Rural farm	22.8	23.2	21.6	25.3	
Rural nonfarm	36.1	37.5	34.1	34.1	
Town ¹					
<2,500 people	20.0	19.5	20.5	21.2	
2,500 - 50,000 people	21.1	19.8	23.9	19.4	
Ethnic group					3.08
Black	19.2	18.3	20.2	22.6	
White and other ²	80.8	81.7	79.8	77.4	
Sex					11.73**
Male	21.4	22.8	17.8	25.8	
Female	78.6	77.2	82.2	74.2	
Marital status					249.56***
Married	42.1	52.9	28.2	18.4	
Widowed	50.6	38.7	65.3	79.3	
Other	7.3	8.4	6.5	-	
Education					51.87***
No school	2.3	2.2	1.9	5.5	
Elementary and junior high (1-9)	50.3	46.3	55.4	59.4	
High school and technical (10+)	34.2	38.8	28.3	24.4	
College (1+)	13.1	12.7	14.3	10.6	
Living arrangement					125.90***
Alone	44.6	35.9	57.8	55.3	
With family or others ³	55.4	64.1	42.2	44.7	
Respondent's monthly income					35.72***
<\$400	48.9	46.3	49.9	64.1	
\$400 - \$699	30.8	30.5	32.7	24.9	
\$700+	20.4	23.2	17.5	11.1	
Spouse's monthly income					200.10***
<\$400	15.2	16.8	13.3	11.5	
\$400 - \$699	13.5	17.9	7.9	-	
\$700+	9.6	13.5	4.5	-	
Not applicable	61.6	51.8	74.4	82.9	
Monthly income from others in household					8.63
<\$200	6.2	6.0	6.6	6.5	
\$201+	3.2	4.0	2.0	-	
No income from others	90.6	90.1	91.4	91.7	
Living expenses each month ⁴					124.37***
<\$600	71.2	63.4	81.4	87.6	
\$600+	28.8	36.6	18.6	12.4	

¹Towns with 2,500 - 50,000 people were included in the sample because they were located in rural counties (those with no more than a 30 percent urban population).

²Others include Native Americans, Hispanics, and Asian Americans (less than 1 percent of the sample).

³One percent of the sample lived with nonrelatives.

⁴The amounts may represent respondents' and spouses' monthly living expenses. The question was, "How much are your living expenses each month.?"

* = $p \leq .05$; ** = $p \leq .005$; *** = $p \leq .0005$

- = Insufficient cases

Rural Southern Elders, 1987-88

Figure 1. Living alone

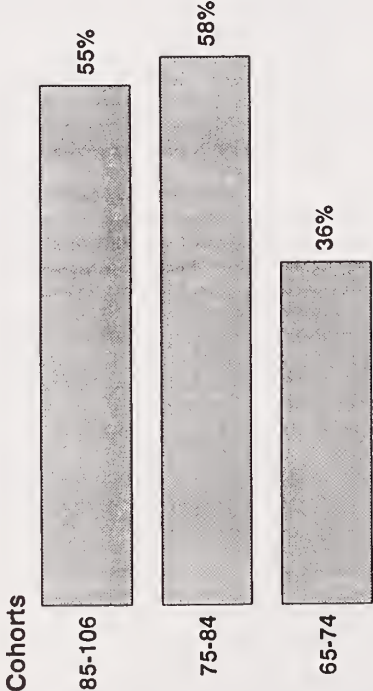


Figure 2. Gender

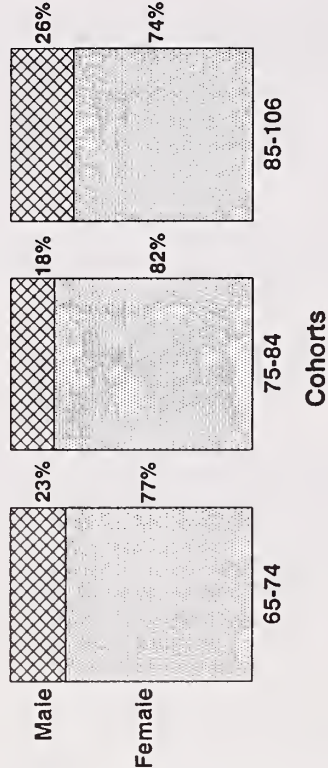


Figure 3. Marital status

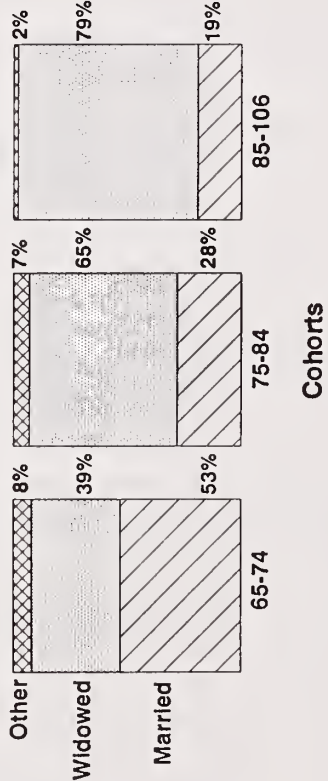
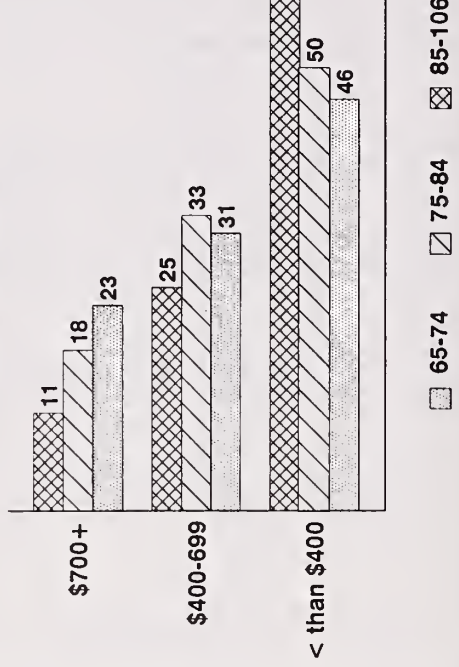


Figure 4. Income



Perceptions of Well-Being Among Rural Southern Elders, 1987-88

Figure 5. Overall

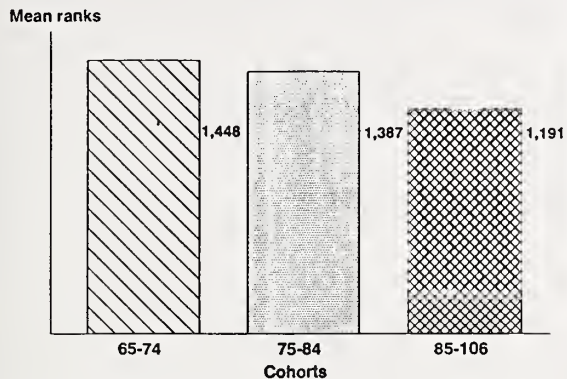


Figure 6. Independent living

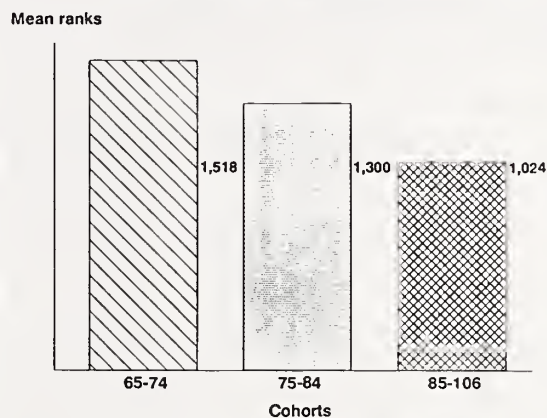


Figure 7. Social interaction

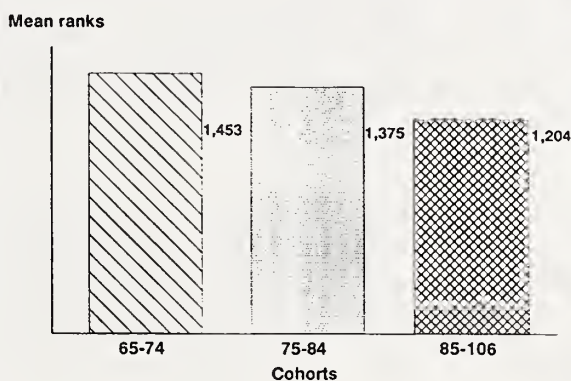


Figure 8. Economic status

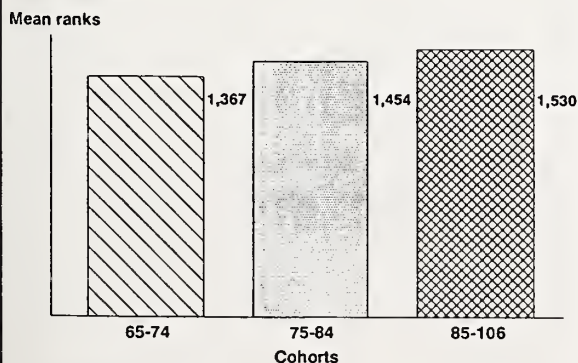
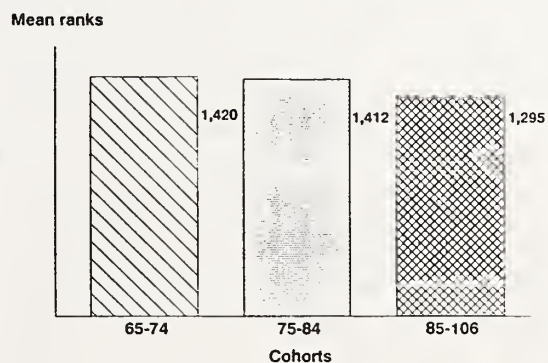


Figure 9. Psychological status





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HEALTH AND SOCIAL CHARACTERISTICS OF THE NONMETRO ELDERLY

Carolyn C. Rogers
Demographer, Economic Research Service (USDA)

The United States population is aging demographically, with concomitant changes in family life, health and social services, and the workplace. With an increase in the size and visibility of the elderly population in general, there has been an increased awareness of the special needs of the rural or nonmetro elderly. The elderly are at greater risk of disability than the general population, and they are substantial users of health, medical, and other services. The ability of elderly persons to live independently in the community has important implications for long-term care and federal spending as well as for effective local planning for health care and other services. The level and determinants of the health status of the elderly by type of residence have received substantially less research attention than demographic and socioeconomic variations. This study focuses on the health status and utilization of health care services by the nonmetro elderly, compared with their counterparts in metro areas.

The availability and accessibility of health care facilities are critical in determining the quality of life for many elderly Americans. In studying the rural or nonmetro elderly, a central issue is their underutilization of health care services, as recognized in a report by the National Research Council, National Academy of Sciences, The Aging Population in the Twenty-First Century. The availability of health care services often poses problems in low-density, sparsely populated nonmetro communities; many of these communities are both far from the sophisticated medical care which is concentrated in metro centers and restricted in their ability to provide like services in their own jurisdictions.

The majority of research on the health status of the rural elderly indicates that they have poorer health and higher incidences of health problems than their urban counterparts (Coward & Lee, 1985; Krout, 1989). Several research studies have found that the rural elderly have a greater number of health problems and more severe health disabilities compared with the urban elderly, and that more rural elders retire for health reasons (Coward & Lee, 1985; Davenport & Davenport, 1977; Lassey, Lassey & Lee, 1980; McCoy & Brown, 1978; and Palmore, 1983). On the other hand, a detailed examination of national health statistics by the Urban Institute found some differences in mortality rates, incidence of acute and chronic illnesses, the number of restricted activity days and bed disability days, and self-assessed health by residence, although these differences were usually neither large nor consistent. The authors concluded that place of residence in general is not associated with significant differences in health status (Paringer, Black, Feder, and Holahan, 1979). Thus, it has not been clearly established that residence has an independent effect on health status of the elderly.

There is more certainty that significant differences exist in health care services for the elderly by residence. Rural areas have fewer health resources and services and a lower ratio of doctors, nurses, pharmacists, and other health care personnel (Krout, 1986; Lassey and Lassey, 1985). Substantial evidence indicates that the range of services for elders living in small towns and rural communities is more narrow, that fewer service alternatives are available in rural areas, that rural health and human services are less accessible and more costly to deliver than in urban areas, and that fewer health care providers exist to offer particular services (Coward & Rathbone-McCuan 1985; Coward & Cutler, 1989; Coward & Lee, 1985; Krout 1986; Miller, 1982; Nelson, 1980; Rathbone-McCuan, 1981; and Taietz and Milton, 1979). The continuing inadequacies of facilities and services for many rural communities is well documented (Coward & Lee, 1985; and Miller, 1982).

In light of such inconsistent findings on residential differences in health status, more systematic research needs to be carried out in order to clearly assess the magnitude and nature of the health status and use of available health care resources by the elderly. The aim of this study is a better understanding of characteristics of the elderly in nonmetro America, the health status of the nonmetro elderly, the social support networks and life conditions affecting the health of the nonmetro elderly, and the availability and use of health services for the nonmetro elderly. The study focuses on factors which differentiate the nonmetro elderly from the elderly in central cities and suburban areas in terms of health status, health conditions and impairments, functional limitations, family structure and living arrangements, social and community support, economic well-being, and the utilization of health care services.

Research which focuses exclusively on the rural elderly, and thereby fails to treat residence as a variable, cannot go beyond the descriptive level and is limited in terms of promoting an understanding of the implications of residence for the lives of the elderly. Coward and Lee (1985) argue strongly that research on the rural elderly needs to be comparative in order to be useful and enlightening. Dichotomous residential comparisons (rural-urban or metro-nonmetro) are inadequate and limited, and an analytic framework that reflects greater residential variation is needed.

Contingency table analysis is used to uncover the bivariate relationship between residence and health status and service utilization, taking into account the effects of demographic and socioeconomic factors. Several factors other than health status and the prevalence of disease and disability determine how the elderly utilize health services. These include demographic characteristics, availability of social support, access to care, health benefits, and provider behavior (Ouslander and Beck, 1982). What role do demographic and socioeconomic factors play in the use of health care services? It is still unclear in many instances how or to what degree differences in service availability influence and affect the health of residents. Analysis of residential differences in the utilization of health services by elderly persons will have important implications for rural development policy and future planning and allocation of resources.

Methodology and Sample Characteristics

The 1984 Supplement on Aging (SOA), a special supplement to the National Health Interview Survey (NHIS), is used to investigate the relationship between residence, health status, and the use of health care services by the elderly. The NHIS is an annual household interview survey of the civilian noninstitutional population of the United States conducted by the National Center for Health Statistics (NCHS). The SOA obtained more detailed information about the health status, social characteristics, and living arrangements of persons 55 years of age and older who were living in the community--a total sample of 16,148 respondents age 55 and over. Information is included on: family structure, relationships, support, and living arrangements; community and social support and use of community services; occupation and retirement and sources of retirement income; health conditions and impairments; activities of daily living (ADLs), instrumental activities of daily living (IADLs), and functional limitations; prevalence of chronic conditions; nursing home stays; and opinions about one's own health.

The elderly are defined as persons 55 years and older. Those age 55 to 69 years old, who are actually middle-aged, serve as a comparison group for those age 70 and older. In many cases, data are presented for the entire age group 55 years and older because either the subgroup of the population is very small (such as minorities) or the event is relatively rare (use of special transportation for the elderly).

Place of residence is one of many factors which affects the health of the elderly. The dichotomy metro-nonmetro conceals important differences within the residential areas. This paper expands the residential classification into nonmetro, suburban, and central city. The residential coding on the SOA limited the residential detail available, but use of the SOA offers the advantage of being able to generalize about the national population.

Health status is traditionally conceptualized as the presence or absence of disease. In defining and measuring the health of the elderly, illness is a better concept than disease in that illness refers not only to the presence of a specific disease, but also to the individual's perceptions and behaviors in response to the disease. More importantly, defining health in terms of disease ignores a critical concept of the health of the elderly--functional status (Ouslander and Beck, 1982). The impairment of functioning--in terms of basic activities of daily living (ADLs) and instrumental ADLs (IADLs)--has important consequences for elderly individuals' ability to cope with disease and illness, as well as their need for health care services. It is therefore critical to include some measure of functional status in defining the health of the elderly. For a more complete assessment of health status, this study examines self-reported assessments of health, functional limitations, and limitations in ability to perform ADLs and IADLs.

The proportions of elderly persons with functional limitations in this study are conservative estimates. Because the SOA excluded the institutionalized elderly, some selection bias is evident. To the extent that the institutionalized elderly have more functional limitations than their noninstitutionalized counterparts, the prevalence of limitations for the total elderly population is underestimated in this paper. Furthermore, the proportions of persons experiencing difficulty would have been higher had the analysis been restricted to individuals who routinely performed each activity, that is, to those at risk of health-related problems in their performance.

Persons who did not perform certain activities for reasons unrelated to health, such as men who did not cook because their wives did so, and those who did not respond were included in the base populations (but not the numerators) of the proportions of persons having difficulty with each activity. Because some of the individuals in these two categories may have had unreported problems performing ADLs/IADLs, the extent of functional disability is thus slightly understated.

Suburban elders were somewhat more likely to be younger than those in central cities and nonmetro areas. A disproportionate share of nonmetro and suburban elders were white, whereas minority elderly (blacks and Hispanics) represented a larger share of the central city population. The geographic distribution of the nonmetro elderly population is the same as the total nonmetro population, with more nonmetro elders residing in the South than their counterparts in central cities and in suburbs. Regardless of residence, only 3 percent of all elders 55 years and above lived in a retirement community.

Approximately two-thirds of both suburban and nonmetro elders were married and living with their spouse, compared with 56 percent of the elderly in central cities. Central city elders were less likely to be married than either nonmetro or suburban elders, and had the highest proportion living alone (29 percent), compared with 23 percent in nonmetro areas and 20 percent in the suburbs. Elderly persons living alone are more likely to experience health problems and higher poverty (Commonwealth Fund Commission on Elderly Living Alone, 1987). Spouses and children are potential sources of social support for elderly persons. Fewer central city elders had any living (adult) children, and nonmetro elders had the largest share with 5 or more children.

Nonmetro elders 55 years and over completed fewer years of education than their metro counterparts. For example, 36 percent of suburban elders had completed 4 years of high school, whereas 32 percent in nonmetro areas and cities had done so. In addition, nonmetro elders were worse off financially than their metro counterparts, especially those in suburban areas. Seventy percent of nonmetro elders 55 years and over had incomes under \$20,000, compared with 63 percent of those in central cities and 49 percent in the suburbs. Not unexpectedly, more nonmetro elders were below the poverty level than were those in cities and the suburbs. Nonmetro and suburban elders were more likely to own their homes (84-85 percent) than were elders residing in cities (69 percent).

More nonmetro and central city elders perceived themselves to be completely retired than did their suburban counterparts, reflecting the younger age structure of the suburban elderly population. Nonmetro elders 55 years and older were more likely to report having retired due to health (31 percent) than either city elders (29 percent) or suburban elders (24 percent). The nonmetro elderly were also more likely to be currently receiving retirement income than the elderly in metro areas. Among retired persons, suburban elders were more likely to have more than one source of retirement income than their nonmetro counterparts. Sixty-two percent of nonmetro elders reported receipt of only Social Security retirement income, compared with 56 percent in cities and 52 percent in the suburbs.

Health Status Differentials

Self-ratings of health status for those age 55 years and above were higher for suburban elders (44 percent reporting their health as excellent or very good), compared with 38 percent in central cities and 37 percent in nonmetro areas. Among those age 70 years and older, the residential distinction becomes less apparent, with 36 percent, regardless of residence, reporting their health as excellent or very good. Self-reporting of health in the elderly correlates well with both ratings by physicians and survival rates, especially in those under 85, and is therefore a useful survey technique (Ouslander & Beck, 1982).

ADLs, especially measures of mobility, are key indicators of one's ability to live independently in the community and are also significant predictors of admission to nursing homes (Branch and Jette, 1982), use of paid home care (Soldo and Manton, 1985), and use of both hospital and physician services (Wan and Odell, 1981). ADLs are the basic tasks of everyday life, including bathing or showering, dressing, eating, transferring (getting in or out of a chair or bed), walking, getting outside, and using/getting to a toilet. Most elders 55 years and over have no difficulties performing personal care activities (ADLs). Eighty-four percent of suburban elders and 80 percent each of nonmetro elders and central city elders reported no difficulty with activities of daily living. Elderly persons are more likely to have problems with walking than with any other personal care activity--nearly 16 percent of nonmetro elders and city elders had difficulty walking, compared with 12 percent in suburban areas.

With advancing age, the prevalence of functional limitations increases, with 74 percent of suburban elders 70 years and over reporting no ADL difficulties, compared with about 72 percent in nonmetro areas and 71 percent in central cities. Sixteen percent reported 2 or more ADL difficulties, compared with 11 percent of the elderly age 55 and older. Hence, the need for assistance in performing daily activities is greater at older ages. A residential difference is found only for difficulty in walking, with 24 percent of nonmetro and 23 percent of central city elders having difficulty, compared with 20 percent of suburban elders. With advancing age, residential location seems to diminish in importance as a factor affecting one's ability to perform activities of daily living.

ADLs do not measure the full range of activities necessary for independent living in the community, and instrumental activities of daily living (IADLs) were developed to partially fill this gap. IADLs include preparing own meals, shopping for personal items, managing money, using the telephone, doing heavy housework, and doing light housework. IADLs capture those activities that are more complex and less severe than ADLs. Elderly persons 55 years and older residing in the suburbs reported fewer IADL difficulties (81 percent with none) than those in nonmetro areas (77 percent with no IADLs) or central cities (76 percent with none). Residential differences are found primarily for doing heavy housework, with fewer suburban elders reporting difficulty with housework.

More elderly persons age 70 and above had difficulties performing IADLs, with less residential variation. Sixty-nine percent of suburban elders had no IADL difficulties, compared with 67 percent each in nonmetro areas and central cities. More elders 70 years and older reported difficulty with 2 or more IADLs than did those age 55 and above. Fifteen percent of elders age 70 and above reported 2 or more IADL difficulties in both suburban and nonmetro

areas, and 17 percent in central cities. In comparison, 8 percent of the elderly 55 years and above in the suburbs, 9 percent in nonmetro areas, and 11 percent in central cities reported 2 or more IADL difficulties. The most difficulty is found in performing heavy housework, with shopping for personal items next in frequency. Within each age group, residential differences are still apparent, though less so for those age 70 years and over.

A third measure of functional ability includes: walking a quarter of a mile, walking up 10 steps, standing for 2 hours, sitting for 2 hours, stooping-crouching-kneeling, reaching up over head, reaching out as if to shake hands, using fingers to grasp, lifting or carrying 25 pounds, and lifting or carrying 10 pounds. Among the elderly 55 years and above, 54 percent of nonmetro elders, 50 percent of central city elders, and 43 percent of suburban elders had one or more functional limitations. Not surprisingly, more elderly persons 70 years and older reported functional limitations than those age 55 and above, with 65 percent of nonmetro elders, 62 percent of central city elders, and 59 percent of suburban elders with one or more functional limitations.

Twenty-six percent of nonmetro elders 55 years and over had difficulty with 4 or more functional activities, compared with 25 percent in central cities and 19 percent in suburban areas. Higher proportions of elderly persons age 70 and above had 4 or more functional limitations, with less residential variation--35 percent of nonmetro, 32 percent of central city, and 30 percent of suburban elders. The activities that elders reported difficulty with most frequently are walking a quarter of a mile, standing for 2 hours, stooping-crouching-kneeling, and lifting or carrying 10 or 25 pounds. With the exception of lifting and carrying activities, nonmetro elders were more likely to report difficulty with functional activities than their metro counterparts. Among those reporting functional limitations, the majority had experienced the limitation for at least one year.

Arthritis and hypertension are common ailments among the elderly and affect one's ability to perform the various activities of daily living. Elderly persons with arthritis more commonly have difficulty with the ADLs of walking, getting out, and transferring. Over half of nonmetro elders 55 and over had arthritis or rheumatism (51 percent), compared with 46 percent in central cities and 44 percent in the suburbs. Forty-two percent of nonmetro elders had hypertension, the same proportion as in central cities, compared with 37 percent in the suburbs. Among those age 70 and older, arthritis and hypertension are more prevalent, with less variation by residence.

The relationship between residence and health status was controlled by demographic variables (age, sex, marital status, living arrangements), socioeconomic status (measured by education and income level), and selected medical conditions (arthritis and hypertension). Elderly persons 70 years and above report their health as excellent or very good less often than those age 55-69 years old. The elderly 70 years and older are more likely to report their health as fair or poor, which is not surprising since ADL, IADL, and other functional limitations are all more prevalent at more advanced ages. Within age groups, health status differences by residence are still apparent, with more nonmetro elders reporting fair or poor health than their metro counterparts.

Women fared worse than men on all measures of health status, with residential differences by gender still apparent. A smaller proportion of women than men reported their health as excellent or very good and a greater proportion of women had at least one functional limitation. It appears that when all persons age 55 and older are considered, sex differentials in self-reported health and functional disabilities reflect the fact that women in this age group are older, on average, than men.

Social support (familial and nonfamilial) is usually thought to be beneficial to health and longevity, and may have a moderating effect on the health and use of health services of the elderly. Married persons use health services less, either because they can substitute home health care (informal care) for formal use of services or because marriage confers other benefits, such as improved health status, that might also be characteristic of nonmarried people who live with others (Cafferata, 1987). The spouse is the most important source of help in times of illness, especially for men; adult children living inside the house, and to a lesser extent siblings, are also important sources of help during illness. Suburban elders 55 years and over were more likely to have a household relative available to care for them than were nonmetro elders or central city elders. The elderly in central cities were more likely to have no one to care for them than their suburban or nonmetro counterparts. Friends and relatives have also been shown to assist elderly persons in a wide variety of nursing tasks. Living with others may reduce the need for the use of formal health care services (such as physician visits), independently of marital status because of the substitution of home care (family members) for formal health care and/or the enhancement of physical and mental health. Formal social support may be more important in the absence of informal support, such as a spouse, (adult) children, other relatives, friends, and neighbors.

Marital status affects self-assessments of health, and not being married is associated with poorer health status. Non-married elders are less likely to report their health as excellent or very good--35 percent of non-married elders in nonmetro areas and 37 percent of their married counterparts reported excellent or very good health. More non-married elders shift their reported health status to fair or poor, compared with their married counterparts. For example, 36 percent of non-married elders in nonmetro areas had fair or poor health, compared with 31 percent of their married counterparts. Non-married elders also reported more functional limitations, with residential differences still evident by marital status.

Elders who lived with their spouse were, as expected, the healthiest as measured by self-assessments of health and physical functioning. Elders who lived with other relatives or nonrelatives had poorer health than their counterparts who either lived alone or with their spouse. It was expected, however, that those living alone would fare worse than those living with others, relatives or nonrelatives. Perhaps the elderly living with others did so because of their poor health and the need for assistance. Suburban elders were in better health for each type of living arrangement. The elderly with 2 to 4 children tended to be healthier than those with no living children.

Higher socioeconomic status is associated with better health. Wide differences in health status are found among the elderly by income level, with fewer low-income elders (incomes under \$20,000) reporting excellent or very

good health than their counterparts with incomes of \$20,000 and above. For example, 31 percent of nonmetro elders with incomes under \$20,000 reported their health as excellent or very good, compared with 51 percent of their counterparts with incomes of \$20,000 and above. Fewer elders with incomes of \$20,000 and above had difficulty with ADLs, IADLs, or other functional limitations. Residential differences within income group for the various measures of health and physical functioning are small but still evident. The income effect on health status is magnified for the nonmetro elderly due to their lower financial standing.

Higher education is also associated with more elders reporting excellent or very good health. Twenty-six percent of nonmetro elders who had not completed high school reported excellent or very good health, compared with 45 percent who had completed 4 years of high school, and 53 percent who had completed one or more years of college. A higher proportion of the elderly with at least 4 years of high school reported no ADL or IADL limitations, compared with those who had not completed high school. Only slight improvements in physical functioning occur for those who had completed some college. Residential differences are still evident within educational groups. The effect of educational attainment on health hits the nonmetro elderly the hardest, as they are more likely to be less educated than their metro counterparts.

Arthritis and hypertension are prevalent among the elderly and affect their ability to perform activities of daily living. Similar proportions of elders with and without arthritis reported their health as good. However, those with arthritis were more likely to report their health as fair or poor. The three measures of physical functioning show dramatic differences, with a much lower level of physical functioning for those with arthritis. The effect is magnified for nonmetro elders who more often have arthritis than their metro counterparts. For example, 90 percent of nonmetro elders without arthritis had no ADL limitations, compared with their counterparts with arthritis (72 percent). Wide residential differences occur for self-assessments of health and functional limitations, with suburban elders faring better than both city and nonmetro elders.

A similar pattern is found for the effect of hypertension on reported health status and functional ability, although the difference between the two groups is lower in magnitude. Elderly persons without hypertension more frequently report their health as excellent or very good than their counterparts with hypertension, with residential differences still apparent. For example, 44 percent of nonmetro elders without hypertension reported their health as excellent or very good, compared with 27 percent of their counterparts who had hypertension.

Use of community services provides some social support for the elderly, and residential location affects the availability of such services. These services include use of a senior center, use of special transportation for the elderly, eating meals in a senior center, use of homemaker services, use of adult day care, and use of a visiting nurse service. Regardless of residence, 81 percent of the elderly 55 years and older used no community services. About 16 percent used 1 or 2 services, and only 2 percent used 3 to 5 services. Nonmetro elders were somewhat more likely to use 2 or more services (10 percent) than their metro counterparts (8 percent).

Use of a senior center (13 percent) and eating meals in a senior center (7 percent) were the most frequently used services. Nonmetro and suburban elders were slightly more likely to use a senior center (13 to 14 percent) than were the elderly in central cities (11 percent). More nonmetro elders ate in senior centers (10 percent) than their metro counterparts (6 percent). Only a very small proportion used a visiting nurse service (2 percent), with no difference by residence. The availability of services in the community is undoubtedly a factor in use, and actual use reflects both availability and level of participation by local residents.

Use of Health Care Services

Health care services can be meaningfully divided into informal care (family, friends, and neighbors), and formal care (community-based services). In this study, informal care is measured by restricted activity days and bed disability days. Regardless of residence, about 7 percent of the elderly age 55 and older were restricted to bed and 13 percent reported restricted activity days in the past 2 weeks. Suburban elders were slightly more likely to have no restricted activity days (89 percent) than were nonmetro elders (87 percent) and central city elders (86 percent). Sixty-two percent of the elderly 55 years and over, regardless of residence, did not use any informal care and 11 percent were high users of informal care¹. Central city elders were more likely to be high users of informal care (13 percent) than nonmetro elders (11 percent) and suburban elders (9 percent).

Formal care consists of physician visits, hospital stays, and nursing home stays. The network of formal services available in small towns and rural areas is more limited in range than the network available in urban areas (Coward and Cutler, 1988). The use of formal health care services differs by residence, with nonmetro elders 55 years and older more apt not to have seen a doctor in the past year (23 percent) than suburban elders (19 percent) and central city elders (21 percent). Somewhat greater physician use is found among those 70 years and older, along a similar residential pattern.

Nonmetro elders 55 years and older were about as likely to have stayed in the hospital for 1-30 days (16 percent) as were their metro counterparts (15 percent). Among those age 70 and older, 21 percent of nonmetro elders had stayed in a hospital 1-30 days, compared with 19 percent of their metro counterparts. Regardless of residence, only one percent of the elderly 55 years and older, and 3 percent of those age 70 and older, had ever been a patient or resident in a nursing home. Twenty percent of the elderly 55 years and over used no formal health care--22 percent in nonmetro areas, 20 percent in cities, and 19 percent in the suburbs². Central city elders were more

¹ Some or moderate use of informal health care means having 1-5 restricted activity days in the past 2 weeks or 1-30 bed disability days in the past year. High use of informal care is defined as either 6-14 restricted activity days or 31 or more bed days.

² Some or moderate use of formal care is defined as either 1-11 doctor visits or hospital stays of 1-30 days in the past year, and no nursing home stays. High use of formal care was determined if the individual had either 12 or more doctor visits, had been hospitalized for 31 or more days, or had ever

likely to report high use (17 percent), compared with their suburban and nonmetro counterparts (13 percent each). This may reflect both poorer health and less social support among the central city elderly.

Use of formal health care services increases with advancing age. For example, 25 percent of nonmetro elders 55-69 years old used no formal care, compared with 19 percent of nonmetro elders age 70 and older. Female elders 55 years and older, regardless of residence, were more likely to use health care services than their male counterparts. Elderly women were also more likely to be high users of formal care, especially those in central cities.

As expected, married elders were less likely to use formal health care services than their non-married counterparts. For example, 17 percent of nonmetro elders who were not married used formal care to a great extent, compared with only 10 percent of married nonmetro elders. More central city elders were high users of both informal and formal care within each marital status group. Twenty-one percent of elders residing in cities who were not married used formal care to a great extent, compared with 15 percent of their married counterparts. Married elderly persons seem to substitute home health care (informal care) for formal care.

Elders who lived with others used both informal and formal health care services more than elders in different living arrangements. Residential differences in health service use still remain. Only small differences in health care use are found by number of (adult) children potentially available for care, with elderly persons with one child or 2-4 children somewhat less likely to use either informal or formal health care. Apparently, the elderly without living children have fewer sources of social support, and hence, use formal care services more frequently.

The effect of socioeconomic status on the use of health care services was assessed by income and educational level. The elderly with less than a high school education used formal health care more than those with at least 4 years of high school. For example, 15 percent of nonmetro elders without 4 years of high school used formal care to a great extent, compared with 10 percent of nonmetro elders who had completed 4 years of high school. Differences in health care use between elders who completed 4 years of high school and those who completed 1 or more years of college were minimal. Residential differences are found in use of both informal and formal health care, with higher use by central city elders.

The low-income elderly (incomes less than \$20,000) were more likely to use informal and formal health care, regardless of residence, than were their counterparts with incomes of \$20,000 and above. Central city elders were more likely to be high users of formal health services than their suburban and nonmetro counterparts. Nineteen percent of low-income elders in central cities were high users of formal care, compared with 16 percent in the suburbs, and 15 percent in nonmetro areas. Among the elderly with incomes of \$20,000 and above, 14 percent in central cities, and 10 percent in the suburbs and 9 percent in nonmetro areas, used formal care to a great extent. Nonmetro elders have lower economic status, on average, than their metro counterparts,

been in a nursing home.

and health care use is clearly affected by both residence and income.

Elderly persons with arthritis are more likely to have functional limitations and to depend on health care services. Seventeen percent of nonmetro elders with arthritis did not use formal care, compared with 28 percent of nonmetro elders without arthritis. Those with arthritis not only used care more, but also used care to a greater extent, with 17 percent of nonmetro elders with arthritis using formal care heavily, compared with 7 percent of nonmetro elders without arthritis. Twenty-three percent of city elders were high users of formal health care, compared with 12 percent of their counterparts without arthritis. Central city elders tended to use formal care to a greater extent than their counterparts in suburban and nonmetro areas.

The presence of hypertension is related to health service use in a similar way as arthritis. Elders with hypertension used health services more often than their counterparts without hypertension, and usage was greatest among those in central cities.

Since one's health status reflects the need for health care, the relationship between health service use and residence is controlled by health status. A marked increase in use of informal and formal health care (moderate and high) occurs for elders with more negative self-reports of health. Among the elderly who had reported their health to be good, 8 percent of nonmetro, 11 percent of suburban, and 13 percent of city elders used formal care to a great extent. In contrast, 26 percent of nonmetro elders reporting fair or poor health used formal care to a great extent, as did 30 percent in the suburbs, and 34 percent in cities.

High use of both informal and formal care increases substantially between elders with one or fewer ADL limitations and those with 2 or more limitations. Residential differences are evident, with 40 percent of nonmetro elders with 2 or more ADLs using formal care to a great extent, compared with 43 percent of suburban elders, and 48 percent of city elders. Among those with one ADL, 23 percent each in nonmetro and suburban areas and 28 percent in cities were high users of formal care. The same general pattern of health care service use is evident with both IADL and functional limitations. About one-quarter of the elderly with no IADLs used no formal care, compared with 7 to 12 percent of elders with one IADL, and 6 to 9 percent with 2 or more IADLs. Eighteen percent of nonmetro elders with 1-3 functional limitations did not use any formal care, compared with only 10 percent of nonmetro elders with 4 or more limitations.

Conclusions

The majority of elderly persons are, and perceive themselves to be, in good health. This paper has examined residential differences in the health status and use of health care services by the elderly. Suburban elders rated their health better than their counterparts in cities and nonmetro areas, and also reported fewer ADL, IADL, and functional limitations than either nonmetro or central city elders. The health status of nonmetro elders and city elders was comparable on these measures. The nonmetro elderly were more likely to have certain chronic conditions, such as arthritis, than their metro counterparts, and this definitely affected their physical functioning. Difficulty in performing personal care and home management activities (ADLs and IADLs) may

indicate some loss in the quality of life, but it does not necessarily indicate a present or imminent need for health and social services.

Residential differences in self-assessments of health and physical functioning were still evident when other factors--marital status, income, education, and arthritis--were held constant. Socioeconomic status, as measured by education and income, interacts with residence to affect the health of the elderly and their use of health care services. This has a double impact on the nonmetro elderly, as they are, on average, less educated and financially worse off than their metro counterparts. The social support networks of the nonmetro elderly may ameliorate their poorer health conditions to some extent, but not enough to overcome the impact of their lower socioeconomic status. Residential differences in health status diminish somewhat with advancing age.

Health care services were expected to be less available to nonmetro elders, and the present analysis supports this. The nonmetro elderly were less likely to use formal health services--physician visits, hospital stays, and nursing home care. Central city elders used both community and health services to a greater extent than either nonmetro or suburban elders. This suggests that indeed there is a gap between the nonmetro elderly's need for care, based on their poorer health status, and the availability of services to meet this need.

The ability or inability of the elderly to obtain help with difficult personal care activities is an important factor in determining which individuals are able to remain in the community and which must enter nursing homes or other institutions for needed care and assistance. A substantial and growing number of the elderly have or are at risk of developing chronic conditions that impair their ability to function independently. Health and social services need to be designed to provide better and more effective care for this population. An increasing number of private long-term care insurance policies and proposed public long-term care insurance programs rely on ADL measures to determine if an individual qualifies for benefits. Residential differences in functional limitations as well as access to and availability of services need to be considered in planning for long-term care.

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THE EXTENSION SYSTEM'S COMMITMENT TO INDEPENDENT LIVING FOR OLDER AMERICANS

Jeanne M. Priester
National Program Leader, ES-USDA

The Extension System is a partnership composed of Extension staffs in the Department of Agriculture in Washington, DC, in seventy-three 1862 and 1890 land-grant institutions and Tuskegee University and in 3,150 county offices. Also included in this partnership are many paraprofessionals and approximately 3 million volunteers. The System's mission is to conduct nonformal educational programs based on research findings and knowledge that meets the interests and needs of people and helps them make informed decisions.

A desire to age in place and to do so independently as long as possible is expressed by many older people. Extension's commitment is to assist in this effort. Consequently, it conducts programs that are targeted to the aging population, adult children with aging parents, and caregivers of the frail elderly.

One way that Extension does this is through inservice training to broaden the faculty's knowledge base and by providing program resources for their use in train-the-trainer settings or directly with clientele. Four new training programs have recently been made available nationwide by State Extension Services and another is being co-sponsored with the American Association of Retired Persons (AARP). They are as follows: **The Senior Series** contains eight comprehensive "how-to" program guides. They provide information on how to help senior adults improve the quality of their physical and mental health, strengthen their independence, and become aware of resources and supports that are available to assist them in living in their own homes. The program guides are being used as resources for building long-range educational programs and creating partnerships in communities. They encourage the use of knowledge, talents and skills of older adults by involving them in a variety of meaningful volunteer activities. Examples of the titles are "SOS for Caregivers," "Enhancing Self-care Among the Elderly," "Intergenerational Relations," and "Senior Olympics." The original guides were developed by Dr. Leo Cram and colleagues at the Center on Rural Elderly, University Extension, University of Missouri. They were then pilot tested by Extension specialists and county agents in States, revised, published, and disseminated through five regional workshops this past summer and

fall. Those who piloted the programs in the States were a part of the faculty for the 3 1/2 day regional workshops. Funding for developing, testing, and publishing of the guides was provided by the W.K. Kellogg Foundation and the University of Missouri System. Two complete sets were provided to each of the 74 land-grant institutions. Five hundred State and county Extension faculty members who participated in the inservice training workshops developed a State Senior Series Team Plan of Action. ¹

When Dependency Increases is a six segment training workshop that can be conducted independently or as a series. The objective is to prepare family members for the time when aging parents or relatives dependency increases. The first three in this series of workshops focused on Family Relationships, Living Arrangements, and Financial Concerns. Dr. Vicki Schmall, Oregon Extension Gerontologist, obtained funding from the American Council of Life Insurance and the Fred B. Meyer Foundation for these carefully researched, pilot tested and peer reviewed education program resources that were made available to Extension and to other institutions and organizations for a low reproduction fee. Forty-nine States purchased and are using them in workshops for Extension agents, volunteers, and State agencies' personnel. The workshop resources include overheads, videocassettes, a comprehensive teacher's guide that contains objectives, instructions for organizing a workshop, press releases, suggested activities that reinforce major skills, worksheets, and participant brochures. The other three workshop resources in the series contain all the components listed above and focus on Mental Health Concerns in Later Life: Depression and Suicide, Loss and Grief, and Alcohol Problems. During the first year of their availability, 13 train-the-trainer workshops were conducted in Oregon and workshops were presented by the specialist at two national meetings. Over 2,000 professionals, family support group, facilitators and educators, and 15,000 family members and older adults have been reached. The Extension Services in Kentucky, Iowa, Kansas and Pennsylvania are using these three resources. Case Reserve Geriatric Program (Ohio) has adopted the programs for statewide training of providers in the aging network and alcoholism counseling fields. The Oregon Senior Peer Counseling programs have adopted the Series for statewide use. The project was a collaborative effort between the Oregon State University Extension Service, Oregon State University College of Education, the Administration on Aging, HHS, (partial funding), Oregon Senior Services Division, Mental Health Division, the Oregon Association of Homes for the Aging, Area Agencies on Aging, and the Office of Alcohol and Drug Abuse. ²

Two Educational Games have been developed by the Oregon Extension Gerontologist and are available nationwide at a nominal cost. "Families and Aging: Deliminas and Decisions" consists of a game board, instructions, playing pieces, dice and seven sets of cards, with 25 cards in each set. Players are cast in a variety of roles during play - older parent, adult child, spouse, grandchild, brother, sister or other relatives. Students and professionals working with older adults report that the game provides greater understanding of family dynamics and decisionmaking. Family members report that the game is a nonthreatening way for them to discuss concerns, fears and questions about aging relatives. Topics that are included are health,

finances, relationships, living arrangements, parent-child relations, and death. "Sex and Aging" is a game of awareness and interaction that provides active learning experiences that challenge players to examine their attitudes about aging and sexuality, develop a greater understanding of the elderly and their emotional and sexual needs. The components and the format are the same as those described above.³

A Minority Nutrition Peer Educator Project was developed and pilot tested in Texas and made available nationwide by Dr. Judith Warren, Texas Extension Gerontologist. Nutrition specialists with the 1862 and 1890 land-grant institutions and staff members from the Texas Department of Aging assisted with the project. Peer educators were recruited from participants in senior congregate meal programs and trained to teach nutrition, health, and mental health lessons at the congregate meal sites. Afro-American and Hispanic peer educators taught the lessons to their peers. The two topics that are addressed for Afro-Americans are hypertension and late onset diabetes. The two topics for Hispanic elders are depression, following widowhood, and overweight as a risk for high-blood pressure. The problems addressed were identified from research literature and from interviews and surveys conducted by the Texas Department on Aging's Minority Elderly Task Force, county Extension agents, Senior Nutrition Site managers and Area Agencies on Aging staff. Focus groups of older minority participants and service providers validated the program topics. The scripts were reviewed by physicians, nurses, and members of the Minority Task Force. Each of these English and Spanish program kits contains a 30-minute videotape, four publicity posters, copy-ready masters of training posters, a program manual, certificate masters for peer educators and participants, and either English or Spanish scripts.

Sixteen counties in Texas and one in Missouri piloted the four programs. Extension agents and nutrition site managers were trained in the methods to use in selecting, training, and supporting the peer educators. Thirty-six peer educators, working in teams of two to four, were trained to implement one of the four programs. Over 1400 older minorities participated in the program series led by the peer educators. The level of interest and meaningfulness of the program content was rated high by a sample of participants. Peer educators had a high level of acceptance and were considered effective by participants, county Extension agents and nutrition site managers. Program results were based on indepth pre- and post-program interviews with a sample of participants from 8 of the 16 Texas sites. Twenty-five Afro-Americans and 24 Hispanics formed the program evaluation group. Interviews conducted in English or in Spanish by three evaluation assistants revealed that some knowledge gain occurred in every aspect of three major areas: weight control, hypertension, and diabetes. Some gain occurred in the area of depression, which was limited to Hispanics. Behavior changes made or planned regarding diet, exercise, and coping strategies included one-half of the respondents stating that they were limiting salt, fat, sugar and/or the amount of food eaten. One-half indicated an increase in the time spent walking and over one-third of the respondents indicated increased ability to handle emotional losses.

Peer educators, nutrition site managers, county Extension agents and participants concluded that the nutrition peer education strategy is an effective teaching method that benefits the peer educators and the elderly minority participants.

Efforts to disseminate the program have included training Extension agents and nutrition site managers in Texas. Training for 170 Extension specialist and county agents as a part of two of the Senior Series Workshops. Other dissemination activities reached 3,846 people at the Texas and Missouri State Departments on Aging conferences and the Southern Region Resource Management Specialists Workshop. A workshop was also presented at the annual meeting of the American Society on Aging. This Minority Nutrition Peer Educator project was partially funded by a grant from the Administration on Aging. ⁴

Another Extension Service comprehensive training program that is available nationwide is the **Volunteer Information Provider Program (VIPP)**. Dr. Burton Halpert, Missouri Extension Gerontology and Health Specialist, through his research in rural communities for the Center on Rural Aging in Kansas City, recognized the need to provide information to caregivers of older adults. In interviews with Extension Homemaker club-members, he discovered that many of these women would volunteer to serve as information providers to caregivers of older people. He and Share Bane then developed an Instructor's Manual which was used to train the Volunteer Information Providers (VIP's) and a Resource Manual: Information for Caregivers of the Elderly was used by the VIP's. Sixty-three VIP's in five rural Missouri counties participated in the field test. They each received 15 to 20 hours of training on the aging process - understanding the normal physical, sensory, emotional and mental changes-basic nutrition and health information and how to make environmental modifications to increase comfort and safety levels. Other major elements in the training curriculum were communications, personal care, consumer information on health care, stress, and community resources.

The 63 volunteers, through their knowledge of the communities and being known in the communities, were able to work with 1100 caregivers. They shared information with individuals and worked with small groups of caregivers. Much of the success of VIPP is attributed to the lack of opportunities for family and volunteer caregivers to acquire the skills needed to improve their quality of caregiving; the lack of adequate supportive and in-home services available in rural areas; and caregivers lack of knowledge of services available and how to utilize the services.

Based upon the pilot program, the manuals and the procedures were revised. The Administration on Aging had partially funded the pilot project and it later funded two Dissemination Training Workshops for State Teams of a 100 Extension State specialists, State Extension Homemaker Council leaders and State Offices on Aging staff members from 18 States. Following the workshops, State teams trained their counterparts in one or more counties. In the start-up phase of the national replication, over 450 VIP's contributed more than 32,000 service hours and shared information with 7,250 caregivers. ⁵

Currently, the original States are extending VIPP to other counties. Virginia Extension Service reports that 336 volunteers in 45 counties have received the training and they are working with over 800 caregivers. In Pennsylvania, six counties trained 41 new VIP's in 1990 and six volunteers in one county worked with 32 caregivers and made group presentations to 102 people. Arkansas reports that in 1990, the VIP's worked with 226 new caregivers and to date over 2500 caregivers have benefitted.

The American Association of Retired Persons (AARP), Extension and other organizations are cosponsoring a **Women's Financial Information Program (WFIP)**. Extension specialists and agents were involved in pilot testing the training modules and resources which were provided by AARP. Currently, Extension in 36 States is cosponsoring WFIP in numerous local communities. AARP funds the training sessions for the State trainers and provides the program resources for the State and county programs. The participants through a series of workshops gain knowledge related to record keeping, goal setting, building financial security, social security, medicare, investments, wills, probate and other financial and legal matters. Arizona reported that WFIP was piloted for two groups with 250 enrollees participating in the seven-week series in 1991 and 70 have registered for the next series. Each participant received the workbook that contains forms and information that are used to organize and record financial and legal documents and for planning purposes.

Over a 1 year period, more than 2,000 women and some men participated in the WFIP series in Colorado. The cosponsored series was taught by specialists and agents and 270 volunteers who had been trained to function as facilitators. The findings of a pilot series with 40 responses revealed that WFIP helped them in the such ways as 100 percent could now discuss their finances, knew more about finances, and where to gain additional reliable financial information. Ninety-five percent felt more confident about making financial decisions and identifying goals. Positive statements such as "I have learned how to be in more control of my finances" and "This is something that more people should attend" were made by the participants.

AARP continues to sponsor regional training meetings for cosponsors and to provide program resources for use at the State and community levels. ⁶

Intergenerational Programs benefit the elderly and the youth who become involved. Extension is committed to making such programs available. For example: A private foundation funded an intergenerational pilot program in two counties in Kentucky. Retired teachers are teaching young people Appalachian heritage skills such as story telling, folk dancing, and making dried apple dolls. They are working together on community beautification projects, diet and fitness activities, and a careers mentor program.

An Intergenerational Initiative has been partially funded by the Northeast Rural Development Center. Eight newsletters are being developed by the project

coordinators and provided to the region's 12 States and the District of Columbia. A survey to determine the status and content of intergenerational programs in the region has been conducted and its findings, resources, and new information will be made available in the region.

"Talent Ties" is a pilot Missouri community volunteer program that provides opportunities for young people and older adults to form friendships in one-to-one interest sharing sessions on computers, photography, electronics, gardening, games, and many other areas. Some of the objectives of Talent Ties are to offer opportunities for young people to associate with caring older people, to develop positive images of older adults, and learn that older people are not all senile and frail and to offer a way for young people to expand their skills. Some of the objectives for older adults are for them to increase their understanding of today's youth and to offer an opportunity for them to share their talents, skills, and knowledge. The process and organizational "how-to" notebook is currently being field tested in several counties in Missouri. It is being sponsored by several University Extension units and supported by several agency and volunteer groups as well as the Sears Roebuck Foundation. The program will be evaluated in February 1992 and the "Talent Ties" notebooks will be available in late spring.⁷

A Texas pilot intergenerational project is Youth Exchanging with Seniors (Y.E.S.). The goal of the project is to promote positive intergenerational relationships between youth and seniors. The Y.E.S. youth provide assisted living services that enhance independent lifestyles for the elderly in rural communities. Major funding was provided by the Robert Wood Johnson Foundation. It is a cooperative effort of the Texas Tech University College of Home Economics, District Two Texas Extension Service, and the Texas Tech University Health Sciences Center. It links 4-H members and Future Homemakers of America with senior citizens in a 20 county area of West Texas. A county Resource Development Team comprised of an Extension home economist, a home economics teacher, and a healthcare professional or a senior citizen coordinates the project in each county. This team enlists a variety of community volunteers from business, healthcare and civic/service organizations to train the youth service providers and to match them with senior citizens requesting services. Another dimension of Y.E.S. is for seniors and youth to conduct a joint project that will benefit the community. During the pilot phase of Y.E.S., 161 adult volunteers have contributed almost 2000 hours of training for 375 youth who have provided almost 1200 hours of service on visits to the homes of senior rural residents. Early in 1992, two resource manuals will be available. One contains information on organizing and maintaining Y.E.S. and the other is a service provider guide for youth.⁸

Pilot projects, such as those described above, often result in training programs and resources that are available nationwide. This prevents duplication of effort and permits Extension faculty to either develop new programs and resources or to devote more energies to implementing programs for older rural elderly, their families and caregivers, 4-H'ers and other youth, the public, opinion leaders and elected decisionmakers. A few examples of other programs in States that are evidence that

this is happening are as follows: An Iowa Farm Progress Show Exhibit featuring housing designs, equipment and furnishings that would contribute to independent living for the elderly or the disabled. Over 75,000 viewed the Exhibit and discussed its content with staff. A "Prescription for a Happy Day" program was conducted in a Florida community. This health theme program included an exercise session, a discussion with a pharmacist, a presentation on stress reduction, an overview of the Vial of Life program, and a nutritious lunch was prepared and served by high school students to 200 seniors. Cornell Cooperative Extension conducted an intensive inservice training for its home economics agents on new developments that affect family caregivers. Included were segments on housing, financial issues, policy and the relationship between family members and nursing home staffs. Extension specialists, a New Jersey agent, and an attorney were the instructors. Home economists in two Connecticut counties developed a two-part series on "Using Medications Wisely" for elderly consumers. A grant from the State Department of Aging defrayed the cost of the visuals developed for the series. The cooperative effort of the Department of Aging in funding programs and Cooperative Extension in implementing programs resulted in 25 programs being presented to 1,019 elderly consumers. South Dakota utilized newsletters, and workshops to teach clientele greater understanding of the aging process, health promotion, economics and caregiving skills. Nursing home staffs were provided training that included sensory changes, feeding with sensitivity and myths, and misconceptions about growing old. Three county home economists taught classes on alzheimers for support groups. The Food and Drug Administration and Extension staff copresented a program on Food and Drug Interactions in two counties. A statewide newsletter for family caregivers was developed and published by the Extension specialists and the State Aging Office mailed it to 1,086 caregivers. In Alabama, a 3-day workshop, "Make the Older Years Golden Years" was conducted to provide information on life strengthening skills to address needs that were identified by five elderly focus groups in a tri-county area. The Alabama Commissioner on Aging, the Director of the Department of Public Health, staff of the State Vocational Rehabilitation Services, the State Insurance Commissioner and State Extension specialists addressed topics such as long-term health care and insurance options, diet and exercise, tax and legal options and volunteering to meet community needs. The 214 participants evaluated this pilot effort that is being revised and packaged for replication in other parts of the State. Educational programs in other States have addressed various aspects of daily living. A few of the titles are: "Using Medications Wisely," "Stress Management," "Housing and Living Alternatives," "Weatherization Improvements," "Effective Grandparenting," "Preparation for Retirement," "Fire Safety," "Hypothermia and Hyperthermia," "Grief and Loss," "Dementia and Alzheimer's Disease," "The Second Half of Life," "Dietary Guidelines," "Reducing Cholesterol and Fats in the Diet," "Safe Handling and Storage of Food," "Over Fifty and Fit," Wills and Estate Planning," and "Durable Power of Attorney, Living Wills and Medical Power of Attorney."

Electronic Technology is being utilized by the Extension partners to increase effectiveness, accurateness and efficiency in the conduct of programs for the elderly. One example is the MAPP database located in PENpages, a computer-based

information service by Pennsylvania State University's College of Agriculture. Included in the database are: Research Briefs and Conclusions, Reference Articles and Bibliographies and Resources such as Census Data, Publications and Program Ideas. Sample MAPP keywords are Children-at-Risk (Discipline, Abuse, Infant), and Dependent-Elderly (Care, Abuse, Aging-parent).

In late summer of this year, the "Senior Series" become a part of the PENpages database. The only charges for using the database are the long-distance rates associated with the telephone call. The database is available toll-free when the Internet communications network is used.⁹

In late 1990, Dr. Kathy Beckham, Ohio Extension Gerontology Specialist, directed and coordinated a video satellite conference on "The Second Half of Life: A Normal Look at Aging." It was downlinked at 21 sites in Ohio and at 28 in other States. A call-in dimension provided opportunities for dialogue between the presenters and the participants.

The formation of **Partnerships** and the joining of **Networks** continue to be aggressively pursued by the System's staff. Examples are: the Administration on Aging, State and Area Agencies on Aging, other agencies in the Department of Health and Human Services and allied State agencies, Foundations, the American Association of Retired Persons, the National Council on Aging, the American Society on Aging, the American and State Associations of Home Economics, the National Fire Protection Association, civic/service organizations, other colleges in land-grant institutions, other institutions of higher education, public schools, the Association of LaRaza and the Black Aging Caucus.

Future: Recognizing that the number of seniors will increase greatly by the year 2011, when the baby-boomers join the group, we are committed to continue to identify and address critical concerns. For example, the Extension Service in Virginia in 1992 will provide leadership to a statewide collaborative initiative to facilitate the development of adult day care in rural and underserved areas. State Aging and Social Service Departments, the Cooperative Extension Service and the Center for Gerontology at Virginia Polytechnic Institute and State University (VPI and SU) will 1) produce a technical assistance manual for the purpose of helping community groups and task forces plan and develop adult day care services and 2) form a technical assistance team to provide assistance to communities while they are engaged in the process.

Pre-retirement Planning resources and teaching modules will be obtained and shared with State Extension specialists in an effort to revitalize this program emphasis area that is critical in today's economy.

Extension will increase its efforts to reach and teach more elderly minority and culturally diverse clientele.

The development of the 1990 Aging White Paper will continue. To date, critiques and additions have been sought from Extension Home Economics Assistant Directors, Extension Aging Summer Institute participants, the 475 Senior Series workshop participants, the HEHN, Extension Service, USDA staff and the Program Leader Council (PLC).

In **Summary**, Extension's commitment to the rural elderly as described in this presentation has included: the development and field testing of educational modules that are available nationwide to the System and to staffs of other agencies and organizations; the target audiences for Extension's education programs; examples of the variety in programs; the networking and partnerships that Extension is forming or joining; examples of the utilization of electronic technology and; future commitments.

For Additional Information and Order Forms:

- ¹ Center on Rural Elderly, University Extension, 426 Lewis Hall, University of Missouri System, Columbia, MO 65211. ² Extension Gerontology, Oregon State University, Milam Hall 161, Corvallis, OR 97331-5106. ³ Extension Business Office, Extension Service, Oregon State University, Ballard Hall 125, Corvallis, OR 97331. ⁴ Texas Agriculture Extension Service, Distribution and Supply Center, 104 System Building, Texas A&M University, College Station, TX 77843-7102. ⁵ Burton P. Halpert, Center on Aging Studies, University of Missouri -Kansas City, 5245 Rockville Rd., Kansas City, MO 64110. ⁶ Barbara Hughes, American Association of Retired Persons, WIFP, 601 E St. N.W., Washington DC 20049. ⁷ Anne Deaton, Gerontology Specialist, CES, University of Missouri, 1628 Stanley Hall, Columbia, MO 65211. ⁸ Y.E.S. Project, College of Home Economics, Texas Tech University, Box 4170, Lubbock, TX 79409-1162. ⁹ Computer Services, Penn State College of Agriculture, 405 Agri. Adm. Building, University Park, PA 16802.



Outlook '92

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OUTLOOK FOR COTTON

Patricia R. Sheikh and Robert A. Skinner
Agricultural Economists
Foreign Agricultural Service and Economic Research Service, USDA

Summary of the 1991/92 Cotton Season

U.S. Production

U.S. cotton production is expected to total 18.2 million bales this season, 17.5 percent above last season and the second largest on record. Upland production is forecast at 17.8 million bales, and extra-long staple at 434,100 bales. Larger planted area (14.1 million acres), coupled with lower-than-average abandonment (4.4 percent) and the second highest expected national average yield (649 pounds per harvested acre), account for the increased production.

Cotton production in the Delta States is forecast at nearly 6.1 million bales, 24 percent above last season's crop and the first time since 1948 that the region totaled over 6 million bales. Louisiana's production is expected to reach a record 1.35 million bales.

In the Western States, cotton production is forecast at 3.7 million bales, down 8 percent from last season. Yields in this region are expected to average 1,189 pounds per harvested acre, 26 pounds above last season. While weather encouraged cotton development this fall, reduced water availability this season lowered planted and harvested acreage by 10 percent.

The forecast for the Southeastern States places production at 2.2 million bales, a 79-percent increase from last season and the largest production since the mid-1960's. In the Southwest, production is projected at 6.2 million bales, 14 percent above last year and the largest crop since 1949.

U.S. Consumption

Domestic cotton mill use in marketing year 1990/91 (August/July) totaled 8.7 million bales, down slightly from the previous season, but the second highest level in two decades. Mill use in the 1991/92 marketing season is projected to increase 4 percent above last season's high level due to larger supplies, weaker cotton prices, and larger cotton textile exports. Mill use is forecast at 9.1 million bales and, if achieved, would represent the largest consumption since the 1966/67 season.

Consumption on a seasonally adjusted annual rate for the second and third quarters of 1991 averaged slightly above 9.1 million bales. Recent strong consumption rates have been associated with rebuilding textile inventories, and good sales of denims, active wear, and yarns. Cotton's share of fibers used on the cotton system represented 74.4 percent of the total during the first 3 quarters of this year. Cotton's share has steadily increased since 1988 when it represented 67 percent of total fibers consumed.

Recent price weakness also may support both cotton's share and consumption rates. Mill delivered prices of cotton declined from 94 cents per pound (\$1.04 on a raw-fiber equivalent basis) in May to 68 cents (\$.75) in October. Prices of polyester, on a raw fiber-equivalent basis, have remained stable at 75 cents per pound since last April. The cotton/polyester price ratio was 1.0 in October, the lowest since April 1990. In October, cotton was in its most competitive position since January 1990.

Domestic mill use is expected to increase despite high levels of foreign cotton textile and apparel imports. Total imports are likely to reach 5 million bale-equivalents in 1991, about the same level as the past few years. U.S. textile exports may reach 1.5 million bale-equivalents compared with 1.4 million in 1990. Despite stronger exports, the cotton textile trade deficit will likely remain near 3.5 million bales, about the same deficit of the past 2 years.

U.S. Trade

U.S. cotton exports in marketing year 1991/92 are forecast at 7.2 million bales, down almost 600,000 from last season. Larger foreign production is likely to lead to lower U.S. exports. Total export commitments reached 5.2 million bales by mid-November, compared with 5.8 million at this time last year. In addition, the pace of export shipments is significantly below last season. Only 774,000 bales had been shipped by mid-November, compared with 1.5 million a year earlier. However, the export pace is expected to increase as the 1991 harvest proceeds.

Increased foreign competition will likely result in lower trade shares in several major markets in 1991/92. U.S. market shares are expected to decline in Korea, Taiwan, Italy, Germany, and Portugal. Overall, the United States will likely capture a 30-percent share of world trade. During the past 2 seasons, China has been a net importer of cotton and will likely continue to maintain that status this season. The United States has been the major source in fulfilling China's import needs. Last season, U.S. cotton accounted for 56 percent of China's total cotton imports. This season U.S. exports to China are projected at 1 million bales, representing nearly 63 percent of its total import needs and 14 percent of total U.S. exports.

More competitive U.S. prices should help achieve this season's export forecast. The Memphis Territory (MT) quote for A-type cotton delivered on the Northern Europe Market has typically been either the fourth or fifth cheapest growth quoted through mid-November. Average weekly MT quotes have been above the average of the cheapest 5 growths of cotton quoted for delivery in

Northern Europe (Northern Europe Price) all season and diverged from the lowest quoted foreign growth by 6.7 cents per pound in early October. However, since then, MT prices have declined relative to the Northern Europe Price and the cheapest quoted foreign cotton. By mid-November, MT prices were 1.8 and 3.7 cents per pound above the Northern Europe price and the cheapest foreign growth, respectively.

Price differentials between U.S. and foreign cotton have narrowed recently, in part, because the User Marketing Certificate Program provisions of the 1990 Farm Bill (step 2 of the 3-step competitiveness procedures). This program requires the issuance of marketing certificates to domestic users and exporters on documented sales made during the week following a consecutive 4-week period in which the lowest priced U.S. growth of cotton quoted for delivery in Northern Europe exceeds the Northern Europe price by more than 1.25 cents per pound. Marketing certificates were first issued on August 29 and have been in effect each week through mid-November. For the 1991/92 marketing year, cash will be issued, upon the recipient's request, rather than marketing certificates when the provision is in effect. Payments for this provision have ranged between 2.23 and 0.98 cents per pound for eligible cotton between August and October. However, the payment rate in mid-November declined to 0.57 cents per pound as the gap between U.S. and foreign prices narrowed.

U.S. quotes for coarse-count cotton offered on the Northern Europe market, as indicated by Orleans/Texas (O/T) prices, have been included in the B-Index between August and mid-November. Average weekly O/T prices have exceeded the B-Index in only 7 of the first 16 weeks of the marketing year.

U.S. Stocks

The tight stock situation of the past 2 seasons is expected to improve this year. Total U.S. carry-over is forecast to increase to 4.4 million bales--2.1 million above the beginning level. The 1991/92 ending stocks-to-use ratio is projected to rise to 27 percent, almost reaching the 30 percent targeted in the 1990 Farm Bill. By October 31, a total of 466,00 bales of the 1991-crop cotton had been placed under loan, compared with 363,400 bales of 1990-crop cotton at this time last season.

U.S. ELS

Extra-long staple (ELS) cotton production in 1991/92 is projected at 434,100 bales, up 21 percent from last season. The 75,600-bale increase in ELS outturn is attributable to both higher acreage and larger yields. Planted area, at 246,200 acres, was 15,000 acres higher than the 1990/91 season. The average yield is projected at 856 pounds per harvested acre, 98 pounds above last year.

Domestic mill consumption of ELS cotton for the first 2 months of the 1991/92 season was 11,829 bales. Mill use is running 12 percent above the 10,548 bales consumed for the corresponding period last season. The continued strong domestic demand for the fiber qualities of ELS cotton will likely push mill

consumption above the 1990/91 level. Current estimates put ELS consumption at 70,00 bales for the 1991/92 season.

Exports of ELS cotton, on the other hand, are projected to decline this season due to increased competition from other major ELS-producing countries. Exports for August, September, and October were only 29,600 running bales, or roughly 35 percent of the 83,300 running bales exported during the first 3 months of the 1990/91 season. At the beginning of November, 1991/92 ELS export commitments (shipments plus outstanding sales) also were running behind last year's pace by nearly 100,000 bales. Based on these early-season levels, 1991/92 ELS exports are expected to reach 325,000 480-pound bales. If realized, this level would be 90,000 bales below 1990/91 exports.

Based on current estimates, total supply of ELS cotton this season is projected at 516,000 bales. With total offtake projected down to 395,00 bales, ELS ending stocks are expected to rise to 111,000 bales by season's end.

Foreign Production

Since the beginning of the 1991/92 marketing season this past August, indications point to foreign consumption in excess of production. Currently, foreign production is estimated to reach a near-record level of 73.4 million bales, nearly 3 percent above the 1990/91 level. Responding to attractive cotton prices in the previous season, a slight expansion in both foreign area and, to a lesser extent, yield is noted when compared to the 1990/91 year. With respect to individual foreign cotton producing countries, increases are evident in the major exporting countries, notably China, Pakistan, the Soviet Union, India, several countries in the both the southern hemisphere and the African Franc Zone.

Among the top four foreign cotton producing countries, the following analysis is provided:

China continues to maintain its dominant position as the world's largest producer of cotton. The 1991/92 crop is estimated at 22 million bales, 6 percent above the previous season largely due to economic incentives favoring cotton which resulted in larger planted area. Thus far, assessments of earlier reports of rain and flood damage have not severely impacted production prospects.

In the Soviet Union, the world's third largest cotton producer, the 1991/92 crop is currently estimated at 11 million bales, 8 percent below the previous year's level. Area is reported to be down 5 percent from the previous season. Most of the decrease in cotton area is attributable to a shift from cotton to food crops. To date, harvests reports are favorable.

The situation in India, the world's fourth largest producer, points to a crop of 10 million bales in the 1991/92 season. If a crop of this magnitude is realized, it would be 10 percent above last season despite a slight reduction in area. Cotton has become increasingly important to the Indian economy. It not only plays an important role in helping to meet rising domestic

consumption needs, but it plays a critical function in helping to move value-added textile and textile products onto the world market.

Cotton's importance to the economy is similar in Pakistan, the world's fifth largest producer. The cotton crop in the 1990/91 season is estimated at 7.8 million bales, up 4 percent from last season due to both area and yield increases.

Foreign Consumption

In the current 1991/92 marketing season, foreign consumption is estimated up 2.3 percent from last season to a record 78.6 million bales largely due to increased consumption in the major exporting countries. This compares with stagnant foreign consumption since the 1988/89 marketing season. With respect to the major importing nations, use is forecast 6 percent below the level consumed in the previous season.

In China, the largest cotton consumer in the world, use is estimated at 20.5 million bales, approximately 3 percent above last season. However, use is somewhat being restricted by supplies and the restructuring that is currently taking place in the textile industry, with the major emphasis on the closure of small, inefficient non-State mills. Consumption also is being adversely impacted by higher raw material, including cotton, and labor costs.

India, the world's third largest consumer, is projected to consume 9.5 million bales during the 1991/92 season. If realized, consumption would be up 4 from last season. In an effort to meet rising domestic consumption requirements, the Government of India has limited the amount of raw cotton moving into the export channel.

Use in the Soviet Union, the world's fourth largest consumer of cotton, is estimated at 8.5 million bales, down 2 percent from the 1990/91 marketing season. Economic restructuring has resulted in some slowdown in the consumption of cotton in the country. Due to the ongoing nature of these changes, it is not yet clear to what extent consumption has been adversely impacted.

In Pakistan, the world's fifth largest consumer, cotton use in MY 1991/92 is estimated at a record 6.25 million bales, up 9.6 percent from the previous season. Including this season, domestic consumption increases have been registered during the last 8 cotton seasons. Some of this increase is to meet demand in the domestic market, while some is due to the Government's drive to export value-added textile and textile products.

Although consumption in the major importing countries as a whole shows negative growth from last season, individual countries within this category have registered increases. This season, the largest consumption increases are expected to occur in Indonesia, South Korea, and Thailand. Consumption growth in all three of these countries is mainly the result of continued growth in domestic consumption of cotton yarn and fabrics and increased world demand for textile and textile products from these three countries. In South Korea, major restructuring and relocation efforts are underway as a result of rapidly

escalating labor costs and severe shortages of labor. On the other hand, the major reason underlying the success of the textile industries in both Indonesia and Thailand has been low labor costs which gives both of these countries a comparative advantage in labor-intensive manufacturing processes.

Foreign Trade

Foreign trade prospects are estimated up 7 percent to 16.7 million bales in MY 1991/92. Among the major foreign exporting nations, the Soviet Union, the second largest cotton exporting country, is projected to gain the largest percentage share of cotton exports. Soviet cotton exports for MY 1991/92 are projected at 3.3 million bales, up 65 percent from last season. Although much uncertainty still surrounds the impact of economic and social changes in that country, cotton exports, primarily through barter trade transactions, appear to be moving into export channels.

As a group, the African Franc Zone countries represent significant cotton exporters. In the current season, over 85 percent of production is expected to be exported. These countries which include Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Congo, French Equatorial Guinea, Gabon, Cote d'Ivoire, Mali, Niger, Senegal, and Togo, are expected to be the third largest foreign exporting bloc in MY 1991/92. This season, exports from the Francophone countries are forecast at 2.3 million bales, 3 percent above the estimated level in MY 1990/91.

This season, Australia is expected to enjoy the position of being the fourth largest foreign cotton exporting country. Exports for the 1991/92 marketing season are estimated at 1.7 million bales, up 13 percent from last year. The recent surge in production is directly linked to cotton's competitive position when compared to competing crops. Moreover, Australia enjoys a reputation as a reliable supplier of high quality fiber. Primary export destination markets include Japan, Taiwan, South Korea, Hong Kong, Thailand, Indonesia, and the Philippines.

Currently, the trade data from Pakistan indicates that it will most likely enjoy the position as the fifth largest foreign cotton exporter. Pakistan's cotton exports in MY 1991/92 are estimated at 1.6 million bales or 17 percent above last season. Since marketing season 1988/89, raw cotton exports have been a residual. Instead, the Government of Pakistan has shifted priorities to the textile sector largely through tax incentives.

Foreign Ending Stocks

Currently, foreign ending stocks are estimated at 27 million bales, 6 percent above the previous season's estimated level and the highest level in 4 seasons. The exporting nations are expected to account for the largest build-up in ending stocks. The largest stock rebuilding when compared to last season is expected to occur in both the Western Hemisphere and Asia/Oceania (both projected at 10 percent), with Africa accounting for the smallest build-up in cotton stocks (4 percent). Within the first two regional groupings, Argentina, Brazil, Colombia, Australia, China, and India are expected to account for the largest increase.

In contrast, ending stocks in the major importing countries are expected to decline 3 percent from the previous year. The European Community, specifically France, Greece, Italy, the Netherlands, and Portugal, will account for the projected decrease in the ending stock forecast for major importing countries during the 1991/92 marketing season.

Foreign ELS

According to the most recent data on ELS cotton supply and use statistics as provided by the International Cotton Advisory Committee, foreign production of ELS is projected down 6 percent from 1990/91. Lower output is projected in Egypt, Israel, Peru, China, Sudan, and the Soviet Union. The decline in production is attributable to slackening demand for textiles produced from ELS cotton (especially in Europe), falling international prices, and drought. Consumption in the major foreign producing countries is expected to match last season's 3.5 million bales. Favorable foreign export prices will likely result in a more normal level of exports currently estimated at 729,000 bales.

U.S. and Foreign Outlook for 1992/93

U.S. Production

The early season outlook for U.S. cotton production points to smaller acreage and production. This decrease is based on the 1992 upland cotton acreage reduction program. A preliminary 10-percent acreage reduction program (ARP) was announced by the Secretary of Agriculture on October 31. The 1990 Farm Bill requires the upland cotton ARP be set at a level which will result in a ratio of projected stocks to disappearance of 30 percent.

Based on USDA's October supply and use estimates, the announced 10-percent ARP level for upland cotton was consistent with this ratio. The final ARP can differ from the preliminary announcement if supply and demand conditions warrant. Since the final ARP must be announced by January 1, it will be based on USDA's December supply and use estimates.

Other details of the 1992 program include a target price of 72.9 cents per pound for upland cotton, with a loan level of 52.35 cents for base quality upland cotton at U.S. average location. No paid land diversion program will be implemented in the 1992-crop year. The marketing loan and 3-step competitiveness provisions implemented for the 1991 marketing year will be in effect next season.

Assuming that the final ARP announcement for upland cotton is near 10 percent, enrollment in the 1992/93 upland cotton program could slightly exceed this year's 84 percent participation rate. If weaker cotton prices persist through spring, larger enrollment with more acreage idled under the 10 percent ARP (5 percent was required in 1991/92), and less acreage planted outside the program would result in lower upland acreage next season.

Total cotton plantings could range between 12.5 and 14.5 million acres with ELS acreage accounting for about 250,000 acres. Acreage in the Southeast is

expected to be near this year's level and acreage in the West could increase if the water situation improves this winter. However, lower acreage is expected in the Delta and Southwest. This season almost 1 million acres in the Southwest and 600,000 acres in the Delta were planted outside the program. Reduced plantings would be expected in these regions.

Given the variability in yields, the total 1992 crop could range between 15.5 and 18.5 million bales. If trend yields and normal abandonment are realized, the upland crop could exceed 16.5 million bales and extra-long staple production could range between 450,000 and 500,000 bales.

U.S. Consumption

Demand prospects for U.S. cotton should remain strong next season. Mill use may exceed recent historical high rates based on improved cotton supplies, competitive cotton prices, and continued consumer preference for cotton textiles and apparel. Total cotton mill consumption in marketing year 1992/93 could range between 9.0 and 9.5 million bales, depending to a large extent on improvements in the general economy.

U.S. Exports

Exports in marketing year 1992/93 may about match the current season's projected level. With only limited growth in world cotton trade expected, U.S. exports could range between 6.5 and 8.5 million bales. Exports of this magnitude would represent a normal share of world trade of near 30 percent.

U.S. Stocks

Based on estimated mill use and exports, total offtake in 1992/93 would be between 15.5 and 18 million bales, slightly below anticipated production levels. Thus, stock levels could increase slightly if these estimates are realized.

U.S. ELS

ELS cotton production in 1992/93, assuming trend yields and normal abandonment, could range between 450,000 and 500,000 bales. With ending stocks for the current season projected at 111,000 bales, total ELS supplies in 1992/93 would imply a range of 560,000 to 610,00 bales.

Mill use is expected to rise only slightly to 70,000-80,000 bales in the 1992/93 marketing season, while a moderate increase in ELS exports is projected, approaching the marketing year 1990/91 level of 415,000 bales. Based on these supply and demand estimates, marketing year 1992/93 ending stocks are projected near the current season's ending stock level estimate.

Foreign Production

If cotton prices remain competitive vis-a-vis other crops in foreign cotton producing countries, output is likely to remain close to this season's level in 1992/93. The possibility of higher production could be dampened if world

cotton prices continue to fall. Moreover, in the 1991/92 marketing season, large ending stock estimates for both the United States and the Soviet Union, the world's two largest cotton exporters, will overhang the market.

Among the four largest foreign cotton producing countries, the following scenario might develop. In China, cotton production is likely to approach this season's level given cotton's importance to the overall economy. A crop size of this magnitude could be supported with an area estimate close to this season's level without adversely impacting area devoted to food production.

In the Soviet Union, cotton production is likely to be somewhat larger than this season's crop of 11 million bales. Minor area decreases could occur in order to shift more area into food production. However, the economics behind growing cotton will be a strong incentive to maintain a reasonable cotton area since no agricultural crop can match the economic return provided by cotton.

India appears bent upon maintaining its relatively newfound position as a major cotton producer and exporter. Although large area decreases are unlikely, additional yield increases are possible given India's low yields when compared to other major cotton producing countries.

Pakistan will likely continue to further expand its position as a exporter of textile and textile products, in addition to meeting rising domestic consumption of cotton. Thus, Pakistan's production could exceed this year's record crop. If this occurs, it will be mainly through yield increases as opposed to large area increases since cotton competes with two important food crops, sugarcane and rice.

Foreign Consumption

Foreign consumption is likely to exceed this season's level largely due to a continuing trend in major exporting countries to channel more cotton into their respective textile industries. However, much will depend upon cotton's competitive position vis-a-vis man-made fibers, the world economic situation, and what occurs in both China and the Soviet Union. In China, how much cotton will be imported will be directly influenced by how much cotton is produced. On the other hand, consumption levels in the Soviet Union will largely depend upon whether the republics can come to some agreement concerning the economic and political changes that are necessary in order to implement a free-market economy.

Foreign Trade

Foreign trade prospects are forecast to be in line with this year's current level given projections of relatively stagnant production and higher levels of consumption. How much cotton is actually exported will depend upon consumption needs in Asia, particularly China, Indonesia, and Thailand, and in Europe. Moreover, much attention will continue to be directed to the export prospects of the Soviet Union.

Foreign Ending Stocks

Similar to the situation in the United States, some stock rebuilding also is

forecast for the foreign cotton producing countries in 1992/93. In marketing year 1991/92, the ending stocks-to-use ratio is estimated to increase to 34.4 from 33.2 percent last season.

Foreign ELS

The 1992/93 outlook calls for strong demand for ELS cotton. Again, according to the ICAC data both ELS production and consumption are expected to increase in foreign producing countries. Although output is projected up in both India and Egypt, the United States is expected to maintain its dominant position as the world's largest exporter of ELS cotton given its price competitiveness, and reputation for being a reliable supplier of this type of cotton.

U.S. Trade Prospects in 1992/93 and Beyond

During the next 5 years, cotton exports from the United States should be in a very competitive position given the market-oriented cotton marketing program that characterizes the 1990 cotton farm legislation. As you know, this legislation will be in place for 1991 through 1995. Additionally, the cotton loan program and acreage reduction program (ARP) of this Act should continue to ensure that adequate supplies are on hand to meet both expanding domestic and export demand.

With world consumption projected to grow during the short term, there is no reason why the United States should not be able to supply some of this increase in world demand. Moreover, a successful conclusion to the current Uruguay round of GATT negotiations also would provide U.S. cotton exporters with expanded market opportunities because of the anticipated growth in the world economy. Additionally, these reforms also would liberalize the textile and apparel trade, enabling the United States to meet increased world demand for cotton products and provide the United States with more market access for high-quality textile products.

Furthermore, a recent USDA study indicates that GATT reform will have a negative impact on cotton production outside of the United States. The analysis indicates that foreign cotton production would likely fall due to cuts in internal support and some shift of acreage from cotton to grain would occur -- even in countries that are not GATT signatories -- because of higher grain prices. The major cotton producing countries of China and the Soviet Union would be likely candidates where a shift from cotton to food crops could occur.

However, the liberalization of cotton trade under GATT must be looked at in conjunction with a reformed Multifiber Arrangement (MFA) that does not adversely impact our domestic textile industry. In general, income growth abroad and improved market access in foreign markets for U.S. textiles should lead to some increase in U.S. textile exports since U.S. textile mills are among the most efficient in the world and would have access to competitively priced raw material.

U.S. cotton exports also should benefit from the pioneering work done in the

United States on High Volume Instrument (HVI) testing which will revolutionize the way cotton is graded and traded worldwide. Mills that utilize HVI classed cotton will be better able to produce a uniform quality of yarn and textile products at competitive prices. Moreover, HVI will also help increase U.S. exports of cotton since the data from this testing can be used in our genetic breeding program to meet U.S. customers demands for fiber strength as well as the physical properties of cotton.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C. 20250-3900



Outlook '92

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COTTON MILL USE IN THE 1990s

Mark D. Lange
Director of Economic Services
National Cotton Council of America

Cotton's dramatic growth in consumption over the past decade is well known. Although important dynamics exist between production and consumption, it is the latter that is of critical concern to those who grow and process cotton here in the U.S. and abroad. The expansion of markets and demand for cotton in the 1980s has allowed countries worldwide the opportunity to shift resources into cotton production profitably. However, the question remains "will the unprecedented growth in cotton consumption continue through the 1990s into the coming century?"

From the U.S. perspective the outlook for future consumption must be looked at in two components: world demand and domestic demand. The U.S. annually uses just over half its cotton crop domestically and exports the remainder. In order to maintain equilibrium in the U.S. and world markets, stable demand in both domestic and export markets is needed.

The U.S. Market

Cotton consumption growth in the U.S. in the 1980s was basically brought on in two areas: a change in consumer's preferences to cotton and record economic growth. From the late 1960's through the mid 1970s consumers were overwhelmed with the introduction of one synthetic fabric after another. Synthetic's share of the market in 1979 had reached over 71% of all fibers. Although synthetics still dominate the market in industrial uses and carpeting, consumers have shifted away from man-made fibers in apparel and home fabrics back to cotton. Cotton's share of the staple fiber market has risen from 40% in 1984 to 49% in 1991. Another measure of cotton's position in the fiber market is cotton's share on the cotton spinning system. This measure indicates the amount of cotton running through spinning machinery designed to run cotton. The share has risen from 58% in 1981 to more than 74% currently signaling manufacturers response to a shift in demand for cotton.

U.S. economic growth during the 1980s also had a part in propelling cotton consumption. GNP, in real terms, grew almost one-third from 1980 to 1990 and industrial productivity more than 25%. Perhaps the most pointed indication of U.S. consumer purchasing strength has been the growth of personal income. Real disposable personal income grew more than one-fifth from 1980 to 1990 and apparel expenditures grew more than 40% during the same time. However, during the same period apparel expenditures as a percent of disposable continued to fall. This increased purchasing power allowed consumers to buy apparel and home fabrics without stretching their budgets and, therefore, buy more of these fabrics, especially cotton.

Fiber consumption over the past decade has increased significantly. Favorable economic conditions allowed net domestic consumption of all fibers to rise more than 40% from 1981 to 1990 (Exhibit 1). During the same period net domestic consumption of cotton expanded more than 78%. Much of the increase in cotton consumption was supplied by foreign manufacturers as cotton textile imports increased 148% from 1981 to 1990.

As the data related to cotton consumption is examined more closely, usage patterns begin to develop in several areas. The quantity of cotton used in apparel varied over the first part of the decade but increased steadily over the latter part until the economy slowed in 1990 (Exhibit 2). Cotton's gains in the '80s are even more apparent when examining the content of apparel. As illustrated by Exhibit 3, the amount of domestic cotton used in apparel almost doubled from 1981 to 1990. Additionally, domestically produced 100% cottons doubled from 1981 to 1990 and the amount of cotton in blends has increased 7%, indicating that much of the cotton increase has happened because consumers want 100% cotton instead of blends.

Home fabrics uses also performed well over the period. After two negative growth years in 1981 and 1982, this category increased over the time frame until the recession in 1990 (Exhibit 4). The total increase in home fabrics cotton consumption from 1981 to 1990 was 52% and the category now accounts for almost one third of domestic cotton offtake. The percent change of cotton in both apparel and home furnishings reflect the importance of income growth. When the economy slipped into recession in 1990 each output category experienced a slight decline in total consumption of cotton.

Overall, given the strong economic conditions of the 1980s and shifting demand, cotton has fought off stiff competitors to earn a much greater share of the market. As shown in Exhibit 5, the number of units sold in apparel and home fabrics dipped in the mid-1980s and then rebounded near the end of the decade. However, cotton took the lion's share of the increased business.

The World Market

World cotton markets have undergone wide swings in supply demand relationships through the 1980s. While the U.S. has been a stable supplier in all but a couple of years in the 1980s, China and the U.S.S.R. have undergone structural and political changes which have changed the face of the world market.

The U.S. has become the world's number one supplier of cotton, taking well over 30% of global trade. Exports account for almost half of U.S. offtake and are vital to the stability of the U.S. market. However, U.S. ability to maintain and increase its world market share is heavily influenced by the seven largest producers of cotton, especially the U.S.S.R. and China. The U.S.S.R. has remained a net exporter, although production and exports have declined through the 1980s. Additionally, the recent political breakup of the U.S.S.R. has renewed the practice of fire selling cotton on world markets to earn foreign exchange.

China has also changed its role in the market. Once the most influential supplier in the world, the country has become a net importer over the last three years and a large customer of U.S. cotton. The Foreign Agriculture Service predicts China will consume more than 21 million bales of cotton in 1991-92, of which 1.5 million bales will be imported.

Japan is the single largest customer of U.S. cotton, followed closely by Korea. Asian countries have expanded textile production over the 1980s and are poised to take on different roles in the 1990s (Exhibit 6). Cotton textile production in Asia has been even more pronounced, primarily due to lucrative apparel export markets, such as the U.S. (Exhibit 7). As Japan and Korea experience problems of rising costs such as labor and capital resources, low margin textile operations are being moved to lesser developed countries where these costs are still low. The U.S. market to developed countries, like Japan, is becoming more limited.

Europe has increased textile production as well, although not on the order of Asia (Exhibit 8). Specialty production in Italy and Germany have led the way in European production, even though German raw cotton imports have dropped in the past few months. The specialized production of fabric has led to a different consumption pattern for cotton. Although mill use of all fibers in Europe is up, cotton usage moderated during the late 1980s (Exhibit 9). The outlook for European mill use will be dominated in the near future by reconstruction efforts in east bloc countries. Pressures on the German and other economies of absorbing workers and converting to new currency has slowed manufacturing activity.

Another region of importance to U.S. cotton offtake is north America. Although the significance of U.S. mill activity has been discussed, the prospect of a North American Free Trade Agreement has made Canada and Mexico become increasingly important. Cotton consumption in north America has increased primarily in the U.S., however, if a trade agreement were approved Canada and especially Mexico could realize noticeable increases in cotton consumption. Additionally, their consumer markets may eventually have the purchasing power to make more apparel and textile purchases.

Trends in Consumption and Technology

Consumer use of cotton in the U.S. as measured by net domestic consumption shows an uneven pattern over the past twenty years (Exhibit 10). The tremendous surge in consumption began in 1982. Whether we experience another surge similar to the 1980s growth rate depends heavily on U.S. income growth, as shown earlier. However, just a trendline estimate of use puts U.S. net domestic cotton consumption at over 12.5 million bales in 1995. Net foreign cotton

consumption follows a much smoother path which more closely tracks the trendline (Exhibit 11). The 1995 trendline estimate of foreign consumption is 80.5 million bales. Thus, world cotton use in 1995 would be over 93 million bales. Current USDA estimates for 1991-92 are 87.7 million bales.

Where this cotton will be spun is a vital interest to U.S. producers. While U.S. mill use of all fiber rose from roughly 23 million bales in 1980 to 27.5 million bales in 1990, more than one-half of that increase was accounted for by increased cotton use. U.S. mill consumption of cotton rose from 6.4 million bales in 1980 to an estimated 8.8 million bales in calendar 1991, accounting for the 95% of North American mill use (Exhibit 12). This has returned U.S. mill use of cotton to levels reminiscent of the mid 1960's.

What factors are associated with this 39% increase in cotton usage over the short span of one decade other than consumer demand? The cotton produced by U.S. growers has improved over the past decade; it is longer, whiter, and stronger than ever before. It is more accurately and completely characterized in the classing process than ever before. U.S. cotton is clearly an improved input in the textile process. But equally important, U.S. textile mills are also different processors.

These mill use increases took place during a period of enormous transformation in the U.S. spinning industry. U.S. spinning positions have fallen precipitously over the decade from over 17 thousand to now slightly over 10 thousand (Exhibit 13). Given the reduced positions, the increased mill use of all fiber would seem to be contradictory until one recognizes the enormous productivity gains realized by the spinning industry in recent years. Pounds of fiber per active position have risen from roughly 300 thousand to over 500 thousand (Exhibit 14).

These productivity gains have been achieved through massive investment programs by the textile industry. One consequence of these investments and the resulting efficiency gains has been the expansion of textile exports (Exhibit 15). Textile exports are estimated to claim 16% of the cotton consumed by U.S. mills. If U.S. textile exports are maintained in 1992-93 U.S. mill consumption should range from 8.8 to 9.2 million bales. The consumer's use of cotton remained strong during the 1990-91 recession. Thus, average U.S. economic performance holds promise for U.S. mill use. Provided no major surges in textile imports occur, U.S. mill use for U.S. consumption will remain strong.

The Outlook

Cotton consumption in the U.S. is highly correlated with available supplies (Exhibit 16). Increased production, shown on the right vertical axis, has been closely followed by an increase in the rate of mill use in the subsequent year, shown on the left axis. Falling production has slowed consumption in the following year. Thus, high and continuously increasing level of U.S. mill use must be supported by continuously high production levels.

The role of international trade will probably be a decisive factor in this decade's performance of the U.S. textile industry. Textile exports are growing at the same time that imports are growing.

Trade developments are going to heavily influence the investment decisions of the U.S. textile industry. If investment continues through the 1990s at the pace of the past ten to fifteen years then 10 years from now increased U.S. mill use may well have approximated the pace of the 1980's. Without that continued investment base, U.S. mill use of cotton will not experience the same expansion rate witnessed in the 1980s.

Improved trade relations world-wide may act as a stimulus to world incomes and the demand for cotton. However, trade pacts such as GATT and the proposed North American Free Trade Act will impact the location of textile mills and upstream manufacturers.

Will U.S. mill use add another 2.5 million bales of cotton consumption in the 1990's? Possibly, but not if any sectors of the industry are complacent about the gains of the past decade. The recently approved Cotton Board checkoff demonstrates the U.S. producers' commitment to increasing support for market promotion and research. In addition, macroeconomic policies to sustain U.S. income growth must be achieved. Lastly, international trade developments must proceed in an orderly fashion, avoiding disruptive and unproductive policy changes.

Exhibit 1

U.S. Net Domestic Consumption

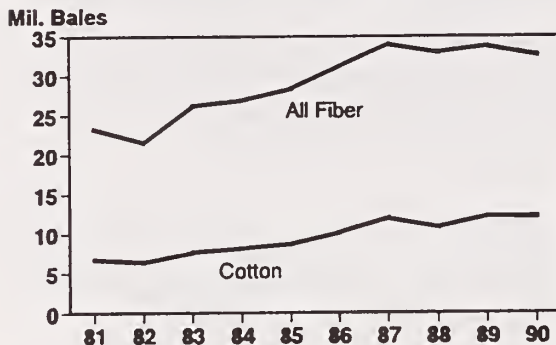


Exhibit 3

Cotton & Competing Fibers in Apparel

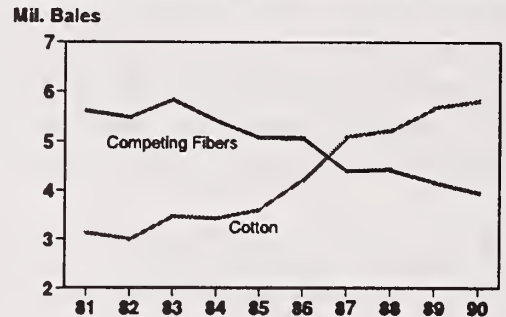


Exhibit 2

Quantity of Cotton-U.S. Apparel Annual Percentage Change

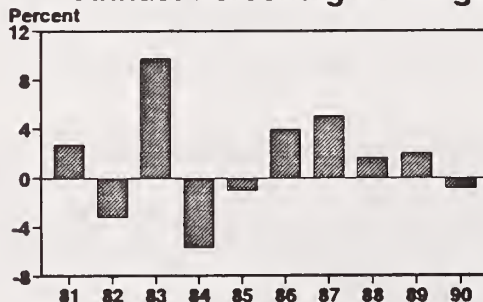


Exhibit 4

Quantity of Cotton-U.S. Home Furnishings Annual Percentage Change

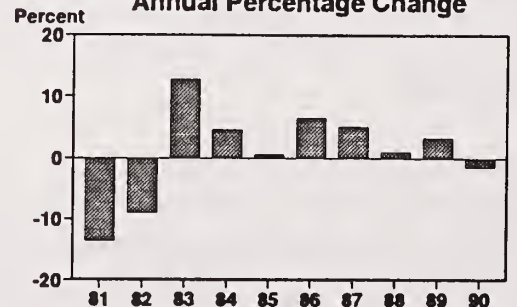


Exhibit 5

Apparel & Home Fabrics

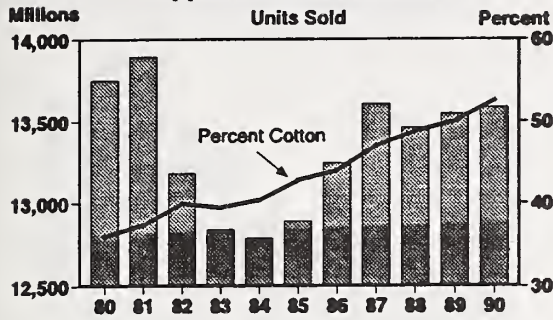


Exhibit 6

Asia

Mill Consumption-All Fibers

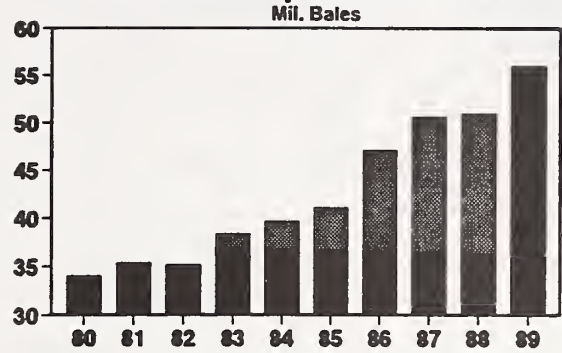


Exhibit 7

Asia

Mill Consumption-Cotton

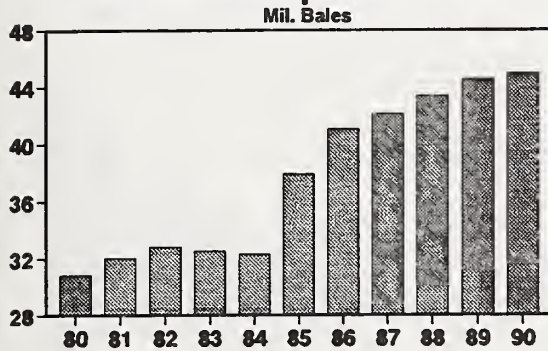


Exhibit 8

Europe

Mill Consumption-All Fibers

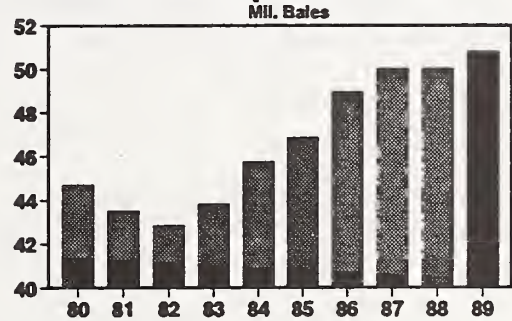


Exhibit 9

Europe

Mill Consumption-Cotton

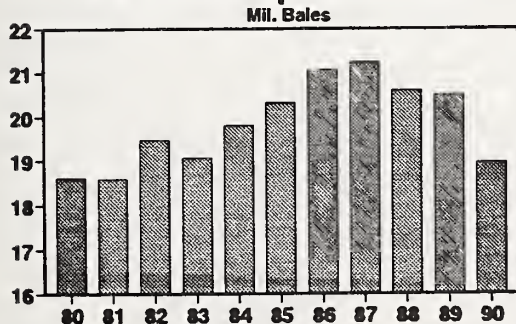


Exhibit 10

U.S. Net Domestic Consumption of Cotton

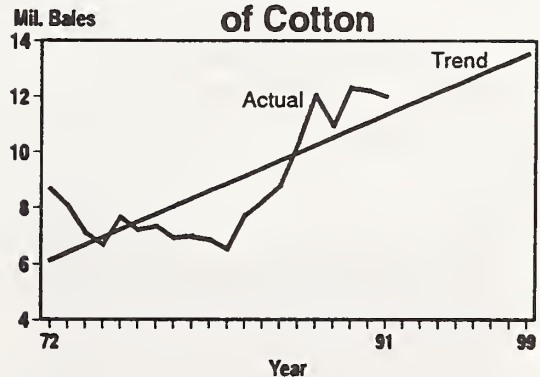


Exhibit 11

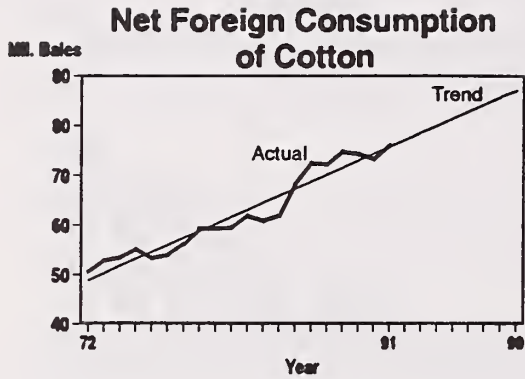


Exhibit 12

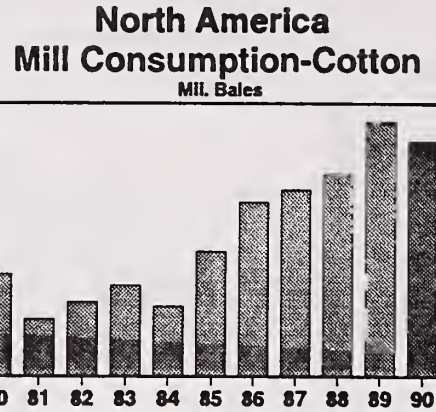


Exhibit 13

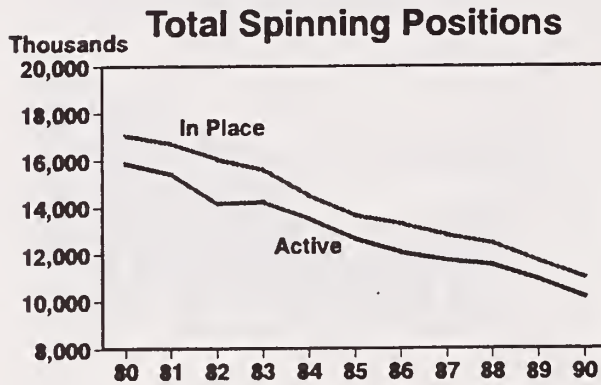


Exhibit 14

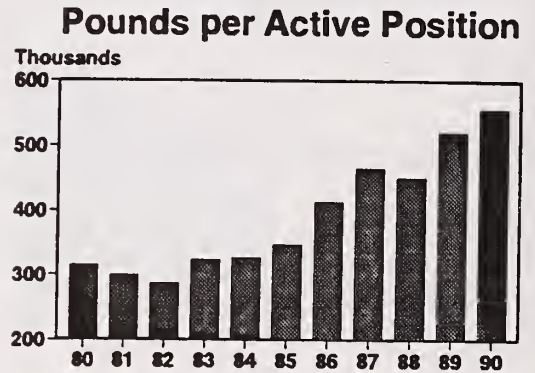
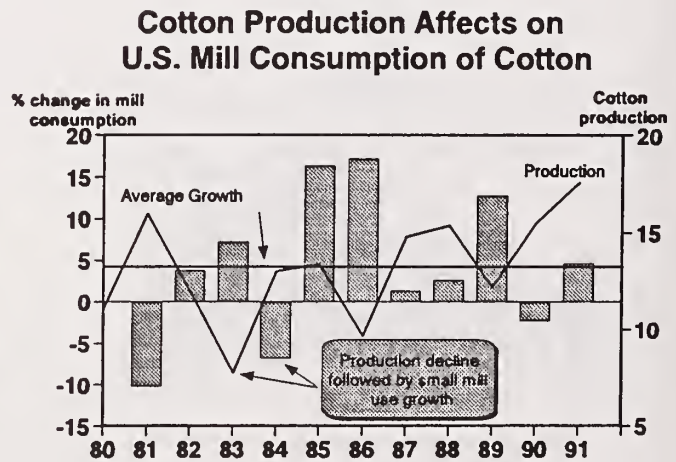


Exhibit 15



Exhibit 16



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United States Department of Agriculture
Washington, D.C. 20250-3900



Outlook '92

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THE OUTLOOK STORY FOR OILSEEDS

James D. Schaub

Agricultural Economist, Economic Analysis Staff, USDA

1991 was a good year for U.S. oilseed production. We have the largest soybean crop in 6 years, the largest cottonseed outturn since 1937, the largest sunflower crop since 1984, the largest peanut crop ever, and a 17-percent increase in flaxseed production. How will the oilseed sector utilize this big increase in available protein and vegetable oil?

Today I will present the outlook for oilseeds. My focus will be on U.S. soybeans but to talk sensibly about soybeans you have to look at world oilseed supply and demand. And, this year its extremely important to watch what is happening with other domestic oilseeds, where there have been some big changes.

I will cover the outlook for 1991/92 and look ahead to the forces that likely will shape 1992/93. I'll look at what the marketing loan program and planting flexibility mean for oilseed production. And, I'll spend some time considering the vegetable oil outlook.

Oilseed Supply in a Global Context

Estimated world oilseed production for 1991/92 is a record 222.4 million metric tons (MMT), 2 percent more than last year. In the United States oilseed production is 63.7 MMT, 5 percent more than last year. On top of this palm oil production is projected to approach 12 MMT in 1991/92. What this means is that the world will have adequate supplies of oilseeds in 1991/92 to support higher consumption of protein meals and vegetable oils.

In the last decade, growth in foreign oilseed production significantly outpaced U.S. growth. This has made it more difficult for U.S. oilseeds and products to find foreign markets. The U.S. oilseed sector has become more dependent on domestic

users. Shares of world trade in soybeans and soybean meal have trended downward. However this marketing year offers some special opportunities for U.S. soybean and soybean meal exports.

The Supply Story for U.S. Soybeans

1991 production is now estimated at 1,962 million bushels, 1.9 percent more than last year. If we throw out the drought year (1988), soybean production has shown very little variability since 1986: 1,943 1,938 (1,549) 1,924 1,926 and 1,962 million bushels.

Year-to-year stock changes have been larger than year-to-year production changes. Carryin stocks for 1991/92 were 329 million bushels, about 9 weeks of total use, or about 14 weeks of domestic crush. The 1991/92 supply is 2,296; this is largest since 1987.

The bigger supply of U.S. soybeans means more for export activity than for domestic markets. Here's why: There has been a larger percentage increase in supplies of competing oilseeds, especially cottonseed and sunflowerseed. Soybean production is up 1.9 percent, supply up 6 percent. Cottonseed production is up 17.8 percent, supply is up 21.3 percent. Sunflowerseed production and supply is up 45 percent. These increases in other oilseeds are equivalent to having more soybeans because they yield oils that are good substitutes for soybean oil and because they yield protein meals that compete with soybean meal. Soybeans and soybean meal dominate world trade in oilseeds and protein meals. Domestic markets will have to absorb much of the gain in these competing domestic oilseeds.

Several factors underlie the gain in U.S. oilseed production. The 1990 farm bill introduced two major changes in the policy/program environment for soybeans and other oilseeds. These were the marketing loan program and the new planting flexibility provisions. First what has the marketing loan meant for soybeans? What will it mean in the future?

The soybean price support program with marketing loan provisions replaces a straight-up nonrecourse loan program that in 1990/91--the last year covered by the 1985 act-- provided loans at \$4.50 a bushel. Marketing loans are now offered at a basic rate of \$5.02 a bushel with a 2 percent origination fee, netting \$4.92 a bushel proceeds to the farmer. Although the simple nonrecourse loan can function as a price floor for soybeans, history shows that this is not generally the case. In the last 12 marketing years, 144 months, the average price received by farmers has been \$5.02 twice and below \$5.02 13 times. These months of low prices occurred during the 1986/87 and 1987/88 marketing years. Farmers

did forfeit soybeans to CCC under the loan program in those years. The point is that most of the time the marketing loan would not have been attractive in terms of marketing loan deficiency payments. It was expected-market prices, not this year's basic loan rate of \$5.02 a bushel, that provided the incentive to plant soybeans.

The new farm bill significantly increased planting flexibility in 1991. A program of limited flexibility began in 1989 which allowed farmers to plant up to 25 percent of a program crop's permitted acres to soybeans without loss of base. There was limited use of the program because soybeans competed against program returns for corn and other crops. The new flexibility opens up 25 percent of the program crop bases to flex into other program crops, soybeans, oilseeds, and other crops except fruits, vegetables, dry edible beans, peas, and lentils without losing any of the crop's acreage base. Because 15 percent of the base is excluded from program payments (this is the Normal Flex Acres or NFA), alternative crops compete on a true market returns basis. On the other 10 percent of base acreage, farmers would be giving up program payments, and alternative crops would compete against program returns.

Early this year there was a lot of interest in how many acres might be attracted to soybeans. The first report from USDA's Agricultural Statistic Board released February 11, 1991, indicated intentions to plant 58.5 million acres, compared with 57,795,000 planted in 1990. The March planting intentions report indicated planting of 57,115,000. The November crop report set acreage at 59,775,000, about 2 million acres above 1990.

A notable feature about the acreage in the 1991 soybean crop is that acreage shifted toward the higher yielding regions of the country. This type of shift has been going on since 1979. As soybean acreage in the South declined, acreage in the higher yielding Corn Belt and Lake States became relatively more important. This has raised the U.S. yield potential for soybeans and may explain the 33.5 bushel yield reported for 1991 despite much drier-than-normal weather in the Corn Belt last summer. Specifically, the coastal States from Virginia to Texas plus Arkansas, Tennessee, and Kentucky all cut acreage from 1990. Fourteen Corn Belt, Northern Plains, and Lake States, plus Maryland, Delaware, New Jersey, and Pennsylvania increased acreage. The 12 eastern and southern States cut area by 1.6 million acres. The average yield for these States is about 24 bushels. The 14 States that expanded area by 3.585 million acres have averaged 33 bushels an acre in recent years.

What kind of data do we have about planting soybeans on NFA and OFA acres in 1991? Although we have a good handle on the size of this year's crop, it's worth looking at the flex question because

it may give an idea of what to expect in 1992. The data on planned use of NFA to plant soybeans and other crops is indicative but not hard. This is because although growers may have reported plans to plant a certain crop they were not obligated to follow the plan. Furthermore the reporting system was not designed to precisely track which crop was indicated for NFA acres. Program signup data reported 4.2 million NFA and OFA acres might be flexed to soybeans. However NASS planting data showed soybean planted area increased by 1.98 million acres, much less than the signup report implied.

The new farm bill provisions worked with market forces to increase planting of other oilseeds. In many States where soybean production declined, cotton planting increased partly because of the lower acreage reduction requirement for 1991, but also because of the new flexibility and prospects for good market prices last Spring.

The Demand Story for Soybeans

Most of the demand growth is coming from the export side. We are in a short-run situation where Brazil, normally a major exporter, because of reduced plantings and below average yields in 1991 ran out of domestically produced soybeans and started importing beans to meet domestic needs. This has allowed the United States to export more soybeans and meal. The benefits to the United States are temporary because Brazil's soybean crop is forecast to recover to 17.5 MMT in 1992. The U.S. export forecast for soybeans is 650 million bushels, which in historical perspective is not that big. 802 million bushels were exported in 1987/88, and during the period 1977/78 to 1987/88 exports averaged almost 700 million bushels and twice surpassed 900 million. Exports of 650 million bushels represents a gain in market share to 66 percent.

On the domestic side, a record large crush of 1,235 million bushels is forecast, based on improved prospects for domestic meal disappearance and soybean meal exports. Meal production will reach 29.3 million tons.

Forecast domestic meal offtake of 23.3 million tons would be a record but that is not surprising given the generally strong trend in domestic disappearance of meal. The specifics underlying domestic meal use includes a strong expansion in the hog sector brought about by nearly 2 years of profitability. The other big outlet for soybean meal is the broiler industry. This sector has shown strong growth for a number of years and growth is expected to continue. However, the growth rate may be slowing down from what was typical in the mid to late 1980s.

The outlook for livestock profitability appears more positive now that the 1991 corn and other feed grain crops have been determined. The crops are large enough to keep the prices for coarse grains low enough to encourage maintaining or expanding livestock numbers. The price of corn is \$2.15 to \$2.55 a bushel, compared to \$2.28 a bushel in 1990/91. Although broiler production hasn't shown much sensitivity to meal and grain prices, the balance of the livestock sector has shown a stronger tendency to contract when if grain and meal prices rise. The price relatives for soybean meal and corn are essentially unchanged. On an annual average basis, the soybean meal/corn price ratio remains at 2.09:1, the same as in 1990 if we use the approximate midpoints of the WASDE forecast ranges.

U.S. meal disappearance has shown relatively little variability. Most of the downturns from trend growth are associated with price shocks from corn and soybeans. These shocks have been weather driven. Some industry analysts suggest that the nature of the hog industry has changed. There are fewer but larger hog operations now. These businesses are believed to be more steady in their production than smaller operations that enter and exit as costs and returns change. Besides the big increase in consumer interest in chicken and other poultry, that industry has also become more concentrated and integrated. The two main markets for meal are now more concentrated and thus more resistant to fluctuations in feed and meal prices.

Soybean meal faces competition from substantially larger supplies of cottonseed meal, sunflower meal, and minor protein meals. Crushing in these markets is going to be driven largely by demand for oil.

A 15 percent increase in soybean meal exports to 6 million tons is projected for 1991/92. Again, some of the gains derive from Brazil's short crop. Reduced soybean supplies in China are also opening opportunities to sell more U.S. product to Asia-Pacific Rim markets. However, this export forecast is far from levels achieved in 1977/78 through 1987/88. Exports of 6 million tons represents a gain in market share to 21 percent.

USDA's current supply, demand, and price estimates for soybeans and products account for announced export assistance to USSR. USDA forecasts declines in Soviet soybean imports from 0.6 MMT to 0.5 MMT, and in meal imports from 3.0 MMT to 2.7 MMT. Current estimates place USSR soybean meal consumption at 3.6 MMT, down 9 percent from last year. Soviet vegetable oil production is forecast to decrease 9 percent in 1991/92, but increased imports will help maintain consumption near last year's level. The Soviet Union has a SOAP (Sunflower Oil Assistance Program) allocation for 30,000 MT and EEP (Export Enhancement Program) eligibility for 80,000 MT of vegetable oils. Soviet oilseed

production is expected to be down because of smaller sunflower and cottonseed crops.

The Vegetable Oil Story

A soybean crush of 1,235 million bushels is needed to provide the meal for domestic and export sectors. While there is clearly adequate demand for meal, there is inadequate demand for the oil that will result from the large crush. Consequently, stocks of soybean oil are expected to grow to a record 2.3 billion pounds. Although soybean oil prices are forecast lower, 17 to 20 cents a pound, this is not expected to buy much additional domestic use, but it will enable more soybean oil exports. Domestic soybean oil use is forecast up only a one percent to 12.3 billion pounds, but exports are forecast up 35 percent to 1.05 billion pounds after a particularly bad export year in 1990/91.

The demand prospects for other vegetable oils are brighter. Other oils are projected to show larger percentage growth in domestic use and strong export growth. Larger supplies of competing vegetable oils are depressing prices across the sector. Certainly cottonseed oil, canola oil, and sunflower oil are expanding their markets, apparently at the expense of soybean oil.

Soybean Price Story

Just as soybean production has been remarkably stable in recent years so too have prices once the record stocks of 1986/87 were worked off and the shocks from the 1988 drought passed. Recent season average prices have been \$5.69 and \$5.75 a bushel, and the current forecast range is \$5.00 to \$6.00 a bushel. Another notable feature about soybean prices in the last few years since the drought is that within year price variability has been relatively small. Here think in terms of average price received by farmers and not the more volatile futures market prices. In fact the highest and the lowest prices reported by NASS during the last two marketing years have been \$6.00 and \$5.36, a range of \$0.64. And the biggest month-to-month price change was \$0.30 between July and August 1991.

Given the forecast price range, 1991/92 soybean prices are unlikely to fall low enough to cause soybean marketing loan deficiency payments.

Looking Ahead

What is ahead for 1992/93 and what are the forces that will shape

oilseed markets?

USDA forecasts the 1992 South American soybean harvest at 29.85 MMT. Whatever the actual production is, its price effects will be transmitted to U.S. farmers' 1992 price expectations and plantings. 1991 showed that soybean acreage is more "mobile" under the new flexibility rules. The potential exists for substantial switching on NFA between program crops receiving market prices and oilseeds. Some parameters are known. The feed grain ARP is 5 percent; the preliminary cotton ARP is 10 percent. And it appears that stocks of soybeans will stay above 300 million bushels (315 million is forecast) and stocks of other oilseeds will grow this year. Expanded minor oilseed production will continue to keep edible oil prices low. The fundamentals don't point to any unusual sources of price strength for soybeans in 1992/93.

The big factors that will shape 1992/93 will likely be things outside the market: weather and government policy. Although the European Community has proposed changes in their oilseed regime for 1991, these adjustments are not likely to much reduce EC oilseed output. And thus the new EC oilseed policy is not likely to have much effect on U.S. oilseeds. Assistance to the Soviet Union and emerging East European markets will continue to be factors affecting demand prospects for oilseeds and products.

Some longer term forces that will shape U.S. soybean prospects include: GATT agreements that are still being negotiated. Related to this are the emerging trading blocs and bilateral trade agreements. Other factors include technical change such as manufactured amino acids, e.g., lysine, which could displace protein meals in feed rations. Expansion of the market for fat substitutes could erode the demand for vegetable oil. Environmental and resource policies could affect not only where a crop is grown, but how it is grown and transportation systems.

Summary

The new flexibility in farm programs likely shifted soybean acreage toward more productive States in 1991. As a result oilseed production is better able to respond to market opportunities than in the 1980's. The demand outlook for the near term is for improved export prospects for soybeans and products. Domestic meal use will remain strong but the domestic vegetable oil market faces a surplus situation.

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MINOR OILSEEDS: OUTLOOK OR LOOK OUT?

Terry Hickenbotham
Agricultural Economist, USDA/ASCS

INTRODUCTION

Following on the coattails of 1990 Farm Bill efforts to boost the faded prospects of soybeans were six oilseeds that succeeded in gaining considerable taxpayer incentives to produce more. These incentives are already increasing Government program costs and threatening soybeans with increased competition.

The Food, Agriculture, Conservation, and Trade Act of 1990 (1990 Act) gave soybean producers higher price support accompanied by marketing loan provisions, and also gave them greater flexibility to plant soybeans on program crop acres without loss of base. However, the 1990 Act gave even higher levels of price support and a larger degree of planting flexibility to "minor oilseeds," namely, sunflower seed, canola, safflower, flaxseed, rapeseed, and mustard seed. Furthermore, three of these seeds (sunflower seed, canola, and safflower) yield more edible oil per unit than does soybeans.

My purpose today is to review the situation and outlook for the newly-supported oilseeds, with emphasis on the actual and potential effects of the Government assistance they are now accorded.

THE CURRENT SITUATION FOR MINOR OILSEEDS

Several oil-bearing crops are grown in the U.S. Those having primarily food and/or animal-protein meal uses include soybeans, sunflower seed, cottonseed, canola, safflower, mustard seed, and sesame. The oil extracted from flaxseed, rapeseed, castor beans, crambe, and meadowfoam is used for industrial purposes, such as in paints and lubricants. Of these, the 1990 Act specifically designates sunflower seed, flaxseed, canola, rapeseed, safflower, and mustard seed for both price and (indirect) income support.

These six crops are now known simply as the "minor oilseeds" in the lingo of the Agricultural Stabilization and Conservation Service (ASCS). Operationally, the price-support program for the minors uses hundredweights (cwt=100 U.S. pounds) as a standard of measure, so I will conform to that in these remarks.

The combined 1991-crop acreage planted to minor oilseeds is currently estimated at 3.3 million acres (table 1). Sunflower seed at 2.6 million acres accounts for the bulk of this, followed by flaxseed (0.3 million), safflower (0.19 million), and canola (0.13 million). These acreages are relatively small compared to 1991 soybean acres of 59.8 million.

However, sunflower and canola acreages increased substantially from respective 1990-crop levels of 1.9 million (up 36 percent) and 0.06 million (up 50 percent). Soybean plantings increased 2 million acres over 1990 levels, but a significant portion of this can be attributed to heavy spring rains in the northwest Corn Belt that led farmers to plant soybeans in place of failed or prevented planting of corn on corn base acres.

Based on national averages, each minor oilseed's yield is below that of soybeans, which is currently estimated at 33.5 bushels (20.10 cwt) per acre for the 1991 crop. Of the edible-oil-yielding minors, canola's 1991 yield is estimated to be the highest at 15.66 cwt per acre, followed by sunflower seed and safflower at 13.05 and 12.32 cwt, respectively.¹

Despite generally higher crop yields for soybeans, the oil content of oil-type sunflower seed, canola, and safflower is in the 40-percent range, well above soybeans at 18 percent. Therefore, each additional acre of sunflower seed, canola, or safflower may add anywhere from 30 to 70 percent more edible oil than an acre of soybeans.

The supply and demand pictures for the minor oilseeds vary considerably. The domestic production of sunflower seed and safflower is export driven, primarily because of direct or indirect export demand for their oil. The U.S. is generally a net importer of canola, flaxseed, and mustard seed. Industrial rapeseed production is crushed domestically, with very little trade in the seed.

Sunflower seed acres are planted to oil and confection varieties, with 85 percent of the 1991 acres planted to oil varieties. We forecast that nearly two-thirds of the 1991-crop oil-type sunflower seed production will be crushed, with two-thirds of the resulting oil being exported. Almost all of the sunflower meal is used domestically. Forecast 1991/92 marketing year average prices of oil and meal stand at approximately \$20.50 and \$4.60 per cwt, respectively, putting the value of the domestic oil and meal production at \$193 million. With oil exports forecast at 496 million pounds (table 2), over 50 percent of the value of sunflower seed crush is forecast to come from oil exports. On top of this, almost 40 percent of confection sunflower is forecast to be exported.

In the case of safflower, over 40 percent of the forecast 1991 production will be exported as seed. Most of the rest will be crushed, and two-thirds of the oil production is forecast to be exported.

U.S. net trade in canola is forecast to be zero in 1991/92, but the U.S. has generally been a net importer. More importantly, we are a considerable net importer of canola oil, with 80 percent of our domestic supply forecast to be imported, primarily from Canada. Industrial rapeseed oil reveals a similar story with two-thirds of the domestic supply forecast to come from imports.

THE 1990 ACT: OILSEED PROVISIONS

The 1990 Act amended the Agricultural Act of 1949, adding a number of provisions affecting soybeans and minor oilseeds. Primary among these are the oilseed price-support program with its marketing loan provisions, and the 0/92 minor oilseed provisions. The "triple base" planting flexibility provisions,

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A brief note of caution. The canola and safflower yields are industry estimates, and are not based on the Department of Agriculture's (USDA's) survey procedures used for soybeans, sunflower seed, and flaxseed. Also, yields vary substantially by area and variety. For example, yields for spring varieties of canola, typically grown in the upper Northern Plains, have averaged below yields of winter-seeded varieties grown in other regions.

while generally applicable to a variety of crops, got their key impetus from the inability of soybean prices to compete head-to-head with the target price of corn.

The 1990 Act: Minor Oilseeds Versus Soybeans.

Where soybeans got price support at \$5.02 per bushel (\$8.36 per hundredweight), minor oilseeds got \$8.90 per hundredweight. Where soybeans got planting flexibility on program-crop bases without loss of "planted and considered planted" base history credit, minor oilseeds got that plus indirect income support on 0/92 wheat and feed grain acres.

The soybean price support rate gives soybeans some downside price protection on "normal flex acres (NFA)" where soybeans essentially compete with the market prices of program crops or nonprogram crops. The exception to this on NFA is minor oilseeds which have a higher-than-soybeans price-support level. Soybeans' \$5.02-per-bushel price-support rate is not enough to make soybeans compete significantly for acreage when stacked up against the target prices of corn in the Corn Belt and upland cotton in the Southeast on "optional flex acres (OFA)." Conversely, the minor oilseeds' loan rates do put minor oilseeds in a position to compete on OFA with the target prices for wheat and barley in the Northern Plains and Pacific Northwest.

0/92 Wheat and Feed Grain Provisions.

Wheat and feed grain producers may place their payment acres of program crop base into the 0/92 program. To be in 0/92 compliance, no more than 92 percent of the maximum payment acres (base minus Acreage Conservation Reserve acres minus normal flex acres) may be planted to the program crop. The portion not planted to the program crop must be put into conservation use or may be planted to a minor oilseed(s). The producer must forgo program-crop deficiency payments on 8 percent of the maximum payment acres. The remaining maximum payment acres, those not planted to the program crop or not optionally flexed to another crop as part of OFA, are eligible to receive the greater of 1) the projected deficiency payment rate or 2) the 5-month deficiency payment rate for the program crop, times the program-crop payment yield.

Producers who plant a minor oilseed(s) on 0/92 acres have to specify by the final certification date in their respective counties whether they want 0/92 payments or oilseed price-support eligibility. Producers who choose 0/92 payments must forgo price-support eligibility for all acres on the farm planted to the applicable minor oilseed(s). Regardless of the option chosen, producers retain planted and considered planted base credit for the program crop.

Oilseed Price-Support Program.

USDA published the price-support regulations for oilseed price-support programs on May 2, 1991, in the Federal Register. In the spring of this year, ASCS headquarters in Washington, D.C. began notifying state and county ASCS offices of operational details of the program, primarily through handbooks and notices covering such topics as 1991-crop county loan rates, county-level loan repayment rates, and price-support eligibility requirements.

The national-average loan rate for soybeans is \$5.02 per bushel, and for each minor oilseed, \$8.90 per cwt. For each oilseed, the loan rates vary by locale. For each producer, the county loan rate is effective once the crop is harvested and extends through the final loan availability date in the year following the year the crop was harvested (March 31 for canola, rapeseed, and flaxseed; May 31 for soybeans, sunflower seed, safflower, and mustard seed).

A select sample of county loan rates (adjusted for the loan origination fee) and loan repayment rates is shown in table 3. The adjusted loan rates apply to the 1991-crops of each oilseed in the counties where the cities noted are located. Unlike loan rates, loan repayment rates change periodically (daily in the case of soybeans, weekly in the case of the minors).

Loan repayment rates are determined as those rates that will minimize potential forfeitures, minimize the accumulation of oilseed stocks by the Commodity Credit Corporation (CCC), minimize CCC's storage costs for oilseeds, and allow the oilseeds to marketed freely and competitively. In practical terms, such values are determined for marketing centers and reflect current market conditions for those locations as much as possible. For counties in the geographical area of one or more marketing centers, marketing center loan repayment rates are adjusted for transport costs to arrive at each counties' "announced" loan repayment rate.

The actual repayment rate for each producer on a given day is the lesser of 1) the "basis" county loan rate plus accrued interest (per hundredweight or per bushel), or 2) the "basis," announced county loan repayment rate. In the case of warehouse-stored oilseeds, "basis" loan rates and loan repayment rates may be adjusted for premiums and discounts which depend on the quality of the crop offered as collateral for a loan.

ARE PRODUCERS USING THESE PROGRAMS?

Unquestionably, minor oilseed producers have used flex acres, 0/92 acres, and the price-support program in their crop-mix and marketing decisions. Nearly 30 percent (0.9 million acres) of the estimated 3.3 million acres planted to minor oilseeds in 1991 were planted on enrolled program-crop acres (table 4).

Of these, 0.4 million were flex acres and 0.5 million were 0/92 wheat and feed grain acres. Most of the flex and 0/92 minor oilseed plantings occurred on wheat base, as producers apparently sought to move away from wheat prices many producers perceived as being low.

Producers primarily chose the 0/92 payment route, with producers choosing price-support program eligibility for only 12 percent of the 0/92 wheat and feed grain acres planted to minor oilseeds.

How do the loan rate and loan repayment rate values in table 3 translate into actual price-support activity?

First, gross program outlays through November 15, 1991, (excluding loans outstanding, accrued loan interest waived due to the marketing loan provisions, and administrative costs), have amounted to over \$25 million (table 5). Producers are continuing to use the program so outlays on the 1991 crops will increase. Interestingly, the minor oilseeds' portion of the oilseed price-support program was initially scored as a no-cost program during the 1990 Farm Bill and Budget Reconciliation debates.

Second, some of the \$25 million has been offset by the 2-percent loan origination fee, mandated by the Omnibus Budget Reconciliation Act of 1990. The fee is collected from producers on both loans and loan deficiency payments (LDPs). An unofficial estimate of the amount collected to date is \$10 million, with over \$7 million of that being collected on soybean loans.

Third, sunflower seed stands out among the crops getting program outlays. Close to 80 percent of the value of total loan deficiency payments have gone to oil-type sunflowerseed.

New processing plants may begin operation at locations some distance from the current marketing centers. If ASCS were to determine that such centers should be accounted for in the county loan rate determinations, the county loan rates around the new plants could rise, possibly increasing the level of price support in those areas. However, the county loan rates nationwide must sum, when weighted by production, to the national average rate of \$8.90 per cwt. Higher rates in one area necessarily would lead to reductions in loan rates in other areas, which could affect production in the counties closest to the existing marketing centers.

Relative crop prices, costs of production, yields, and minor oilseed loan rates will continue to affect crop-mix decisions. Wheat, barley, and oats are the primary crops grown in areas where minor oilseeds are currently grown. At planting time, if the expected market net returns on such crops as wheat, barley, and oats are not competitive with the price/price-support levels of minor oilseeds or the market net returns of minor oilseeds plus a 0/92 payment, then some producers may continue, as they were this year, to be favorably disposed towards minor oilseeds on normal flex and 0/92 acres. On a program crop's flex acres, however, relevant crop-mix financial decisions will not only be based on 1) the "same" program crop versus minor oilseeds, but also 2) the same program crop versus other program and nonprogram crops as well.

The wheat supply and demand outlook has tightened from what it was earlier this spring. Because of this, producers could be inclined to flex less wheat acres into minor oilseeds than we saw in 1991. On the other hand, some wheat, oat, and barley producers reportedly held back on minor oilseed production in 1991 to see how the new oilseed programs would function. Because the price projections for oats and feed-barley are not bullish, some of these producers may increase the plantings of minor oilseeds on 0/92 oat and barley acres.

Producers, of course, may plant minor oilseeds on flex or 0/92 acres for reasons other than the current year's financial returns. Crop rotation and drought-tolerance considerations also enter the picture and could spur minor oilseed production on program acres. For instance, in drought years sunflower seed, a more drought-tolerant crop than wheat or barley, could substitute for these crops, but volunteer sunflowers in subsequent years will tend to limit switching for this reason.

The bulk of the minor oilseed planted acres this year were on nonbase acres. The extent to which plantings can be expanded depends on the availability of additional nonbase acres and unconventional planting on base acres. The potential for sunflower seed (because sunflower acres account for most of the minor oilseed acres) and canola (because it appears to be the current darling of the industry) are particularly notable.

Sunflower seed plantings peaked at 5.6 million acres in 1979, 3 million more than were planted in 1991. The combined effects of disease, insects, and birds on yields has led many producers to switch a portion of what once had been planted to sunflowers to other uses. Some acres were planted to program crops; the acres are now considered base acres and are subject to the planting-mix decisions described above.

Some portion of the 5.6-million acres were eventually put into the Conservation Reserve Program (CRP), starting in 1986. Acres enrolled in the CRP will not come out of the program until 1996 at the earliest.

Fourth, the information to date suggests that the greater the LDP rate, the more likely producers are to choose LDPs rather than loans. For instance, flaxseed's LDP rate has averaged the highest so far, and 93 percent of the crop that has been brought into the program has been paid LDPs (from table 5, $1801.1/(1801.1+127.44)$). Similarly, oil-type sunflower seed, with the second highest LDP rate, has averaged 92 percent.

MINOR OILSEEDS OUTLOOK

Let's look at the potential for the minor oilseeds over the next few years, in the context of domestic and global considerations and policy and market influences.

Global Considerations.

Most of the domestic, minor-oilseed production is driven by demand for edible oil products in international markets. While edible oil demand in the last decade has increased, much of the expanded demand has been satisfied by increasing production of palm oil, the world price of which is below that of the edible oils derived from minor oilseeds and soybeans. As world edible-oil demand continues to expand, palm oil production could expand in traditional producing areas and into Africa and South America. However, the question of which countries' oil may fill that demand depends on consumer preferences.

Much of the pre-existing demand as well as some of the expanded demand has also been filled by supplies of indirectly-subsidized edible rapeseed oil from the European Community (EC). The EC has proposed an alternative to its existing Common Agricultural Policy as that policy relates to oilseeds (especially edible rapeseed). The acceptability of that proposal under the auspices of the U.S. complaint against the EC regarding this policy in the General Agreement on Tariffs and Trade (GATT) is in doubt. The final outcome of that case and the broader Uruguay Round of GATT may have much to do with the competitiveness of U.S.-produced minor oilseeds and soybeans.

A possible GATT agreement, especially one that might target elimination of specific export subsidies, could well influence spending for U.S. edible-oil assistance programs. Under this scenario, U.S. programs created to "level the playing field" with the EC, particularly the Export Enhancement, Sunflower Oil Assistance and Cottonseed Oil Assistance Programs, could change.

Domestic Considerations.

Crop mix and marketing decisions regarding minor oilseeds will depend on producer expectations of net returns and program benefits among crops, and agronomic considerations.

Consider first that the price-support portion of expected financial returns for minor oilseeds may undergo considerable regional changes. The minor oilseed price-support level in a particular area (county loan rate) depends on the nearness of that county to a marketing center and the relative price levels between marketing centers.

Recall that the current set of marketing centers is shown in table 3. County loan rates for a minor oilseed generally decline with increased distances from a marketing centers.

Those acres in production now and any new acres brought into production will face the same yield-reducing problems from disease and pestilence that the sunflower crop has encountered in years past. Plant diseases did not affect yields much this year, but after continuous years of planting such problems may recur. The possibility of regaining the lost acreage is clouded by these considerations.

Canola, because it has both spring and winter varieties, is grown in the Southeast, Corn Belt, Great Plains, and Pacific Northwest. In the Southeast, its greatest potential, perhaps, lies in being double-cropped with soybeans.

Soybean plantings on 0/92 wheat and feed grain acres were prohibited by the 1990 Act. However, producers can double crop winter canola and soybeans on wheat and feed grain flex acres, but they must satisfy the program crop's acreage reduction requirement for both crops. Conversely, producers can zero-certify a program crop acreage base, and double-crop winter canola and soybeans. With either option, producers will not lose acreage base credit for the program crop, nor oilseed price-support eligibility for the double-cropped oilseeds.

The Food, Agriculture, Conservation, and Trade Act Amendments of 1991, approved as a Congressional conference report on November 25, 1991, but still not law as of that time, would require the Secretary to allow soybeans to be double-cropped with a minor oilseed on 0/92 wheat and feed grain acres for farms with a 3-out-5-year history of double cropping. This statutory change is too late to affect winter canola/soybean decisions for 1992, but may have an impact in 1993 and beyond.

Canola production in the near-term may be hindered by continual reports of pod shattering and subsequent yield losses, the lack of approved herbicides and pesticides, lack of nearby processors in many areas where its production can be expanded, and lack of research funding. Moreover, Canada, which currently supplies the bulk of U.S. canola oil consumption, has fewer crop alternatives than the U.S., so U.S. producers will have to continue to compete with much larger Canadian production (table 6).

SUMMARY

The minor oilseed price-support and planting flexibility provisions of the 1990 Act have set the stage for output expansion. In 1991, U.S. plantings rose to 3.3 million acres, up from 2.5 million acres in 1990. In the midst of the first year of operation under the 1990 Act, U.S. oilseed producers have used both the price-support and planting flexibility features. Most of the acreage planted to minor oilseeds in 1991 was to high-edible-oil-yielding crops, sunflower seed, canola, and safflower. These crops and their products compete with foreign oilseeds and products, and also with domestically-produced soybean oil and meal. The extent to which U.S. and foreign commodity programs will influence oil and meal competition domestically and internationally depends on and, indeed, lends support to, the successful outcome to the Uruguay Round of GATT.

TABLE 1. MINOR OILSEEDS: U.S. SUPPLIES, DEMANDS, AND PRICES - 1991/92 MARKETING YEAR 1/									
ITEM	SUNFLOWER	FLAXSEED	CANOLA	RAPESEED	SAPFLOWER	MUSTARD			
AREA (1000 Acres)									
Planted 2/ 3/	2595	305	130.0	22.2	193.4	17.3			
Harvested 3/	2530	292	126.1	21.6	187.6	17.0			
YIELD (Cwt/Acre) 3/	13.05	8.57	15.66	15.66	12.32	10.40			
SUPPLY (1000 Cwt)									
Begin Stocks 3/	1760	544	320	12	630	88			
Production	33030	2506	1970	338	2310	100			
Imports	220	3214	550	0	0	1030			
Total Supply	35000	6264	2850	350	2940	1296			
DISPOSITION									
Crush	17970	4928	1880	319	1286	1169			
Other Use/Resid	7730	69	90	10	0	28			
Planting Seed	260	147	15	2	94	1			
Total Domestic	25960	5144	1985	331	1380	1186			
Exports	3310	420	550	0	944	23			
Total Use	29270	5564	2535	331	2324	1209			
ENDING STOCKS 3/	5730	700	315	19	634	87			
PRICES (\$/Cwt)									
MRG-PR Price 3/	9.65	6.15	8.80	9.25	11.75	14.00			
Meal Loan Rate	8.90	8.90	8.90	8.90	8.90	8.90			

1/ USDA, Foreign and Domestic Stocks of Oilseeds are estimated at 3.243 million cwt.
 2/ For feed use, the oilseeds are estimated at 3.243 million cwt.
 3/ Crude seed, without oil, and meal, 40% moisture, and prices are based on industry estimates, not on National Agricultural Statistics Service survey estimates as in the corresponding data for soybeans and corn.

TABLE 3. 1991 OILSEED "BASIS" LOAN RATES, AND "ANNOUNCED" LOAN REPAYMENT RATES: SOYBEANS BY TERMINAL MARKET (11/21/91), AND MINOR OILSEEDS BY MARKETING CENTER (11/22/91-11/28/91) 1/									
OILSEED	LOCATION	LM-LOP 2/	IMP. LAB 3/	OTILSEED	LOCATION	LM-LOP 2/	IMP. LAB 3/	ANN. LAB 3/	
Soybeans	Amarillo, TX	4.75	6.37	Oil	Pargo, MO	9.31	9.35	9.35	7.91
	Chicago, IL	6.03	6.59	Sunseed	Red Wing, MN	9.13	9.13	8.83	8.83
	Cincinnati, OH	6.11	6.69						
	Quincy, MO	4.88	6.30						
	Evansville, IN	5.12	5.72	Other	Pargo, MO	9.13	9.13	8.92	8.92
	St. Louis, MO	5.35	5.95	Sunseed	Ooodland, KS	9.13	9.13	8.92	8.92
	Louisiana Gulf, LA	6.18	5.78	Canola	Auquate, GA	10.52	10.52	9.04	9.04
	Memphis, TN	4.89	5.38		Orest Pella, MT	9.32	9.32	8.42	8.42
	Minneapolis, MN	5.30	5.93		Red Wing, MN	9.32	9.32	8.82	8.82
	St. Louis, MO	5.19	5.55		Valley, MO	9.32	9.32	8.82	8.82
Mustard Seed	Peoria, IL	5.03	6.60	Reprocessed	Orest Pella, MT	10.05	10.05	9.42	9.42
	Toledo, OH	4.99	6.55	Refined					
	TXO, IL	5.07	5.63						
	Texas Gulf, TX				Colusa, CA	9.41	9.41	13.42	13.42
					Corcoran, CA	9.41	9.41	13.30	13.30
					Richmond, CA	9.41	9.41	10.84	10.84
					Culbertson, MT	9.41	9.41	10.84	10.84
	Grand Forks, ND	9.13	9.42	Processed	Pargo, MO	9.20	9.20	8.78	8.78
	Orest Pella, MT	9.13	8.55		Orest Pella, MT	8.55	8.55	8.83	8.83
					Red Wing, MN	9.64	9.64	8.55	8.55

1/ Prices are reported in dollars per bushel, minor oilseeds in dollars per hundredweight.
 2/ LM-LOP is the lowest of loan and oil price less 2% loan obligation fee.
 3/ ANN. LAB - Announced loan obligation fee.

TABLE 2. EDIBLE OILS: U.S. SUPPLIES AND DISAPPEARANCE - 1991/92 MARKETING YEAR 1/							
OIL	SUPPLY		DISAPPEARANCE		PRODUCTION TO		TOTAL USE 3/
	STOCKS (Oct 1)	PRODUCTION	IMPORTS	DOMESTIC USE	EXPORTS	DOMESTIC USE 2/	
----- Million Pounds -----							
SOPHEAN	1766	13874	10	12300	1050	112.8	80.6
CORN	140	1725	2	1225	525	140.8	10.0
COTTONSEED	136	1285	6	941	325	136.6	7.5
COCONUT	284	0	882	900	44	0.0	0.0
CANOLA	62	92	617	684	15	13.6	0.6
PALM KERNEL	54	0	386	376	4	0.0	0.0
PALM	53	0	300	304	4	0.0	0.0
SUNFLOWER	47	737	9	220	496	335.0	4.3
PEANUT	18	258	2	210	35	122.9	1.6
SAPFLOWER	28	51	20	46	34	110.9	0.3
TOTAL	2588	18022	2233	17205	2632	105.7	105.7

1/ USDA, forecast

2/ Domestic production of 6 gives oil relative to domestic consumption of that same oil. B, g, stands oil. 62/1584/100=13.15.

3/ Domestic production of 6 gives oil relative to its total domestic consumption of raw oils alone. B, g, stands oil. 62/1703/100=40.15.

1/ USDA, Foreign and Domestic Stocks of Oil are oil. E.g., crude oil. (2/24/91)*100=13.5.
 2/ Domestic production of a given oil relative to the total domestic consumption of the oil shown. E.g., crude oil. (2/21/91)*100=0.5.
 3/ Domestic production of a given oil relative to the total domestic consumption of the oil shown. E.g., crude oil. (2/21/91)*100=0.5.

TABLE 4. MINOR OILSEEDS PLANTED ON ENROLLED PROGRAM CROP ACRES, 1991 1/									
PROGRAM CROP	TYPE OF CROP ACRES BASE					TOTAL			
	FLEX 2/	U/92			LOAN ELIG 5/				
		TOTAL 3/	PAY/92 4/	8% CU 4/					
----- 1000 ACRES -----									
Wheat	210	279	211	31	37	489			
Corn	65	99	70	10	13	184			
Sorghum	18	12	6	1	5	30			
Barley	67	114	96	11	7	181			
Oats	18	41	34	4	3	99			
Rice	9	6/				9			
Oilseed Cotton	16	6/				18			
TOTAL 3/	404	545	423	57	65	949			
U/ USDA/ASCS, 1991 Enrollment Form and Producer Report, July 30, 1991. (An early run of ASCS' compliance software as of November 20, 1991 suggested that most of the acreage listed are unenrolled lower than shown here. See the Outlook speech by Bruce "Butsy" Vothel entitled, "Here is the Farm Bill Working!" for a portion of these comments.)									
2/	Totals are the sum of normal and option acre (NFA and OPA).								
3/	Totals may not add due to rounding.								
4/	8 percent of the maximum payment acres (sum - NFA - ASB) are ineligible for payments when producers opt for the O-SMP program.								
5/	Eligible for price-support.								
6/	Payments are not allowed to be placed on SMP acre and estate acres within last of SMP payments and planted and sustained planted acreage base levels.								

1/ USDA/USDA. 1991 Enrollment Base and Program Acres, July 31, 1991. (See early use of ACP) enrollment base. 2/ FLEX is the number of acres of the crop enrolled in the program. 3/ Total acres enrolled in the program. 4/ PAY/92 is the number of acres of the crop enrolled in the program. 5/ LOAN ELIG is the number of acres of the crop enrolled in the program. 6/ See the Quicklook report by John "Buddy" Weber entitled, "How is the Farm Bill Working?" for a portrait of these numbers.
 7/ Plus acres on the acre of normal and option that were (NFA and OFA).
 8/ Total may not add due to rounding.
 9/ Acres of land enrolled in the program.
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TABLE 5. 1991-CROP OILSEEDS: LOAN DEFICIENCY PAYMENT (LDP) AND LOAN ACTIVITY, CUMULATIVE THROUGH NOVEMBER 15, 1991 -- PRELIMINARY 1/

OILSEED	LDP ACTIVITY			LOAN ACTIVITY				
	TOTAL QUANTITY	TOTAL PAYMENTS	AVERAGE PAYMENT 2/	QUANTITY UNDER LOAN	TOTAL REPAYMENT 3/	MARKET GAIN QUANTITY 3/	MARKET GAINS	AVERAGE MARKET GAIN 4/
Minor Oilseeds	1000 Cwt	1000 \$	\$/Cwt	1000 Cwt	1000 Cwt	1000 Cwt	1000 \$	\$/Cwt
Oil Sunseed	13,343.23	19,691.91	1.48	1,160.27	118.72	93.17	146.72	1.57
Other Sunseed	811.66	336.92	0.42	498.50	10.76	9.65	5.20	0.54
Flaxseed	1,801.10	4,995.28	2.77	127.44	6.24	6.14	20.09	3.27
Canola	323.16	200.92	0.62	28.31	0.75	0	0	0
Rapeseed	18.00	11.14	0.62	0	0	0	0	0
Safflower	0	0	0	6.81	0	0	0	0
Mustard Seed	0	0	0	13.51	0	0	0	0
Soybeans	1000 Bu	1000 \$	Per Bu	1000 Bu	1000 Bu	1000 Bu	1000 \$	\$/Bu
	0	0	0	70,220.10	42.99	0	0	0
TOTAL	25,236.17			172.01				
Cwt:	Hundredweight (100 U.S. pounds)							
Bu:	Bushel							
1/	Quantities shown for loan activity, "quantity under loan" and "total repayment," are derived from ASCS state-office data files. All other quantities and dollar amounts are obtained from county-office ASCS files.							
2/	"Total payment"/"total quantity".							
3/	"Market gain quantity" may exceed "total repayment" because the data file sources are different, as noted in footnote 1/.							
4/	"Market gains"/"market gain quantity".							

TABLE 6. CANOLA: U.S. AND CANADA, PLANTED ACRES AND PRODUCTION, 1988/89-1991/92

COUNTRY/ITEM	UNITS	MARKETING YEAR			
		1988/89	1989/90	1990/91	1991/92 1/
CANADA 2/					
Planted	Mil Acres	9.1	7.2	6.4	8.1
Production	1000 Cwt	95000	68000	73000	92600
U.S.					
Planted	Mil Acres	0.0375	0.0700	0.0648	0.1300
Production	1000 Cwt	3900	950	970	1970
1/ Forecast, November 1991. 2/ Source: Agriculture Canada. Acres and production are rounded.					

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture

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Outlook '92

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Canola and the Common Market, A Producer's Perspective

Alan E. States
First Vice President
U.S. Canola Association

Thank you. Its a pleasure to be a part of the Agricultural Outlook Conference.

I am a Kansas farmer. I grow wheat, feed grains and oilseeds.

After the detonation of the first atomic weapon, Einstein stated to the effect that "Everything has changed except for the way that men think." We are in that situation now. It is time to back away from the trees and look at the forest.

Domestically, canola, sunflower and other minor oilseeds have been put on a nearly level playing field with other major farm crops. U.S. canola production in 1991 will supply almost 14 percent of domestic demand. Now that farm policy impediments have been removed production should rapidly increase. Seed companies will develop varieties specifically for the United States. Farmers will develop the local agronomic knowledge to produce the crop and the industry will develop the infrastructure to handle the crop.

When I started I stated that I am a producer of feed grains. I don't grow corn. I grow milo. I am also a producer of oilseeds, but I don't raise soybeans. I grow sunseed and am working with canola. I am a farmer from Kansas, but I am not required to be a wheat grower. Under the 1990 law the everything has changed. It is not sufficient that we react.

We must anticipate and take the offensive, especially in the area of trade. We have products to sell. We need to be more aggressive in market development.

Probably an area where the offensive is the most appropriate is in the area of competition with the European Community. This is particularly true in the area of vegetable oils.

I am troubled by the lack of progress toward a satisfactory agreement in the agricultural area of the General Agreement on Tariffs and Trade (GATT). I see movement toward what may be an unsatisfactory agreement that would institutionalize some unfair practices. If this occurs it may be difficult for Congress to approve the agreement under the theory that no agreement is better than a bad agreement.

Should the trade war continue, I can see no winners. I can see only casualties. However I believe that there is a solution to the problem.

I believe that the European Community (EC) has two primary objectives that need to be considered.

First, the EC desires to have a high level of self sufficiency in food supply.

Second, farm income must be maintained at a level dictated by the internal political conditions in the EC.

The United States and other agricultural exporting nations also have two primary objectives that need to be addressed.

First, they desire access to the world markets for their products.

Second, they want to eliminate the price depressing effects of the EC export policy.

I believe that the parties to the GATT can make an agreement that meets the objectives of all concerned.

To do this the agricultural income support policies of all parties must be made export neutral. Therefore, the linkage between income support and incentives to produce in quantities in excess of domestic usage must be broken.

Governments provide incentives to produce in various ways.

Historically, the United States has encouraged agricultural production by offering commodity price supports at levels greater than the variable cost of production. In addition, the United States has developed a deficiency payment system that supports farm income. To the extent that the farmer must produce in order to obtain deficiency payments, the deficiency payments are an incentive to produce.

The EC has encouraged production by providing minimum prices for agricultural products.

The policies of both the United States and the EC have encouraged production of agricultural products in excess of domestic needs. The excess production has then been exported at prices less than the acquisition costs of the governments involved. Thus, exports have been subsidized. World market prices have been depressed. Non-subsidized exporters have been harmed. Developing nations have been harmed to the extent that the low commodity prices have discouraged the growth of domestic agricultural production and have encouraged the expenditure of funds for imports.

Export subsidies make little economic sense and should be eliminated.

In 1985 the United States began to break the linkage between income support and the incentive to produce. The so called "Zero/Ninety-Two" provision of the 1985 Food Security Act provided that income support would continue to the farmer even if he did not choose to produce the product concerned. This provision, coupled with price support loans at levels below the local variable cost of production, removed the artificial incentive to produce. Thus, wheat, feed grain and oil seed production in the United States is now export neutral as far as production incentives are concerned.

If the countries of the EC would break the linkage between production and income support a resolution of the GATT difficulties could occur.

Due to the food security concerns of the EC the income support program would be somewhat different from the "Zero/Ninety-Two" program in the United States.

For example, assuming seventy-five percent of a country's historical production of wheat is consumed domestically, the country concerned could require that the each farmer in that country produce at least seventy-five percent of his historical acreage of wheat in order to receive income support. The country involved would then issue a payment directly to the farmer based on the difference between the domestic market price and the "target" level of income support multiplied by the total quantity of wheat historically produced by that farmer. Commodity price supports and import restrictions could be eliminated.

A country requiring production of a product as a provision for producer income support would then not be allowed to be a net exporter of that product under the terms of the GATT. Thus, if production exceeded the domestic needs, the country involved would lower the production requirements needed to qualify its farmers for income support.

Using such a system, the country concerned could provide for domestic food security, reduce domestic food prices, maintain farm income at any level deemed to be socially or politically desirable and eliminate the subsidized export of its economic resources.

While the production required to maintain domestic food security would limit foreign access to that domestic market, subsidized production would not distort export market prices. Thus all parties to the agreement would benefit.

In addition, any county using commodity price supports or marketing loans as a method of income support would not be allowed to export the effected production if the support levels were set at a level high enough to act as an incentive to produce. Any price support or marketing loan in excess of the domestic variable cost of production could be considered an incentive to produce.

Income support or "deficiency" payments not linked to production requirements would not be considered to be export subsidies nor would they be considered as incentives to produce.

I believe that a GATT agreement based on the terms that I have outlined would be beneficial to all parties. Most of the objectives of the parties concerned would be met. Free access to certain domestic markets would still be limited but at the cost of limiting exports from that market. Farm state members of Congress might even find it easier to explain to their constituents come election time.

Thank you for allowing me to present these ideas to you.

I hope that they will provoke thought.

Again it has been a pleasure to be here. I believe that some time has been allowed, so if you have any questions about what I have said or if you need clarification don't hesitate to ask.



Outlook '92

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AN OVERVIEW OF CLEAN WATER LEGISLATION

Robert H. Wayland III

Director

**Office of Wetlands, Oceans, and Watersheds
U.S. Environmental Protection Agency**

This afternoon I'd like to suggest that reauthorization of the Clean Water Act has much in common with the Chinese character which means future--for the Chinese derived that pictograph by combining elements of their symbols for danger and opportunity.

I'm not a linguist. I don't speak Chinese. High school Spanish was a struggle for me. And, EPA, indeed the Administration, will not determine the outcome of next year's legislative deliberations. But from the ancient past of my early career as legislative strategist, and my more recent work in formulating implementation policies for broad legal mandates, I'd like to suggest that there are three principles all participants in the process could be guided by in maximizing the opportunity and minimizing the danger inherent in the next Clean Water Act reauthorization.

They are: vision, a shared understanding of where you are in progress towards that vision, and stakeholder involvement (or, in TQM terminology, customer focus).

- **Vision**

A view of what the future might be--our vision helps us to define goals and objectives and measure our success. Without vision we are compelled to follow Yogi Berra's prescription, "When you come to a fork in the road, take it!"

or

As some great leader said, "If you don't know where you're going then, there you are!"

- **Shared understanding**

Requires a realistic appraisal of progress, barriers, and opportunities, as well as a commitment to base our decisions on the best information possible, coupled with a recognition that we must sometimes act in the face of uncertainty.

- **Stakeholder involvement**

It might seem to be a given that a legislative process is broadly participatory--but this isn't always the case. Sometimes major interests don't show up. Sometimes they render themselves ineffective because their world view is so different that they have trouble learning the language of the key players.

EPA is endeavoring to involve stakeholders in policy formulation and program implementation decisions. We find this approach:

- can broaden perspective--allowing decision makers to consider a wide range of potential solutions and impacts, and
- can build trust and sensitivity--people with divergent views on issues find that sitting at the same table, honestly tackling problems together can help to reduce friction and lead to better understanding of each other's needs and expectations.

How do these elements play in the context of water quality in 1991?

First, I need to go back to the vision of the Clean Water Act:

"to restore and maintain the physical, chemical, and biological integrity of the Nation's waters."

First enacted in 1972, the act set ambitious goals for all of us. At the very core of this vision is the notion of stewardship, good management. Farmers have long recognized the importance of stewardship--looking to the future, managing their resources wisely both to preserve their land and ensure that their children and grandchildren can be productive farmers. That stewardship ethic must guide all of us in the management of our Nation's vital water resources.

Participation in the upcoming legislative process will not be effective unless it proceeds from acceptance of this broad vision.

In the early years of Clean Water Act implementation, we focused on curbing the damages from major sources of water pollution. The images of fouled waterways were bold--a burning Cuyahoga River, a dying Lake Erie, and right here in the Nation's capitol, a stinking, algae-choked Potomac River. We searched for solutions to control the most obvious, point sources of pollution--at the time, wastewater discharges by industrial and municipal facilities.

Much has been accomplished and much remains to be done.

Industrial and municipal wastewater pollution control systems are in place, and work continues to improve them. For example, between 1977 and 1988, the number of people served by adequate sewage-treatment plants, that is secondary treatment or better, increased 84%--from 75 million to 138 million. However, many cities and towns still need to improve their wastewater treatment.

Also in the early 70s and 80s, we launched a massive effort to control nutrient and toxic pollution from industrial sources. We developed effluent guidelines and industry-wide standards, and today, 65,000 point sources are subject to permitting. In the main, industry has reduced pollution by more than 90 percent at a cost of \$16 billion annually. Government (state, local and federal) spends a further \$16 billion annually to protect water quality, principally for the construction, operation, and maintenance of sewage treatment facilities. (This compares to expenditures in the low hundreds of millions to prevent or control pollution from many other diverse or "nonpoint sources.")

Some of our waterways, which have traditionally received the outflows of industrial and municipal wastewater, have responded well to improved point source pollution control. Today, for example, fishermen catch prize winning large-mouth bass in the Potomac River and many of the river's natural and commercial uses have been restored.

Across the nation, however, our lakes and rivers are muddy and filled with debris after heavy rain. Water quality assessments indicate that pollutants, such as silt, nutrients, pathogens, and pesticides, are still present in unhealthy amounts. It is clear that point source controls alone are not sufficient to restore and maintain our waters--that pollutants are coming from many diverse sources, called collectively, nonpoint sources. A recent EPA Science Advisory Board study found that of the known, remaining impaired rivers, 70% of impairment is caused by nonpoint source pollution. Agricultural activities are responsible for the majority of the nonpoint source problems we face.

Obviously, this is an important issue. Increasingly, resources and energies will be devoted to finding solutions for nonpoint source problems, and the responsibility for many of these solutions will likely fall on the agricultural community. In addition, both industry and urbanites have begun to raise issues of equity insofar as who should bear the burden for remaining clean up in the face of the investments they have made.

NONPOINT SOURCE POLLUTION CONTROL

The vision of the Clean Water Act was certainly broad enough to encompass nonpoint source pollution, and we have not been completely indifferent to the problem. In 1980, EPA and USDA initiated the Rural Clean Water Program to develop and test nonpoint source pollution controls for agricultural runoff.

To date, the RCWP, with a total appropriation of \$70 million, has funded 21 watershed projects in 22 states across the nation. It has helped us to more fully understand the benefits of particular best management practices and it has provided an excellent model for the development of nonpoint source controls on a local level. However, it is too narrow to solve the problem of agricultural nonpoint source pollution.

In 1987, reflecting growing awareness of the increasingly dominant influence of nonpoint source pollution on water quality, Congress enacted Section 319 of the CWA.

Under Section 319, states are mandated to assess and report on nonpoint source pollution, adopt, and implement management programs. Section 319 also provides for grants to assist the states in implementing their programs. In 1990, Congress appropriated \$40 million. In 1991 and 1992 about \$50 million was appropriated each year.

Last year, Congress reiterated their vision and strengthened nonpoint source programs by enacting the Coastal Zone Act Reauthorization Amendments of 1990. CZARA, as it is known in EPA, requires that the 29 states with approved coastal zone management programs, including several Great Lakes states, to develop and implement management measures for nonpoint source pollution to protect and restore coastal waters.

Recently, we proposed guidance specifying management measures for CZARA, and working with NOAA, we also proposed guidance on state coastal

nonpoint source program management. Both documents are open to public comment until December 16.

WETLANDS PROTECTION

There is another arena where agriculture and clean water legislation interact, that is --wetlands.

Let me go back to the vision and examine its relationship to wetlands. The Clean Water Act sets as a general goal *"to restore and maintain the physical, chemical, and biological integrity of the Nation's waters."* Wetlands play an extremely important role in the integrity of our waters.

Because they are usually located between open water and high ground, wetlands are particularly good filters--they intercept runoff, remove and retain nutrients, process organic and chemical wastes, and collect sediments.

Wetlands also buffer shorelines against erosion. Wetland plants bind the soil with their roots and help to absorb impacts from wave and flood action. They also help to control floods by absorbing water during heavy rainfall and then slowly releasing it.

Wetlands are critical to the survival of many plants and animals. They provide food and shelter for about half of our endangered species.

Many fish spend at least part of their lifetime in wetlands, and nearly all (96%) commercially important fish are wetland-dependent--in 1986 alone, wetlands contributed to a commercial, marine harvest valued at over \$10 billion.

Despite their remarkably important functions, despite being some of the most productive natural systems in the world, wetlands have long been misunderstood and abused. Over the past 200 years, more than half the original acreage of wetlands in the lower 48 states has been lost--dredged, filled, or otherwise destroyed--to make way for human activity. Our remaining wetlands constitute only 5% of our land area. It is critically important to protect wetlands and the Clean Water Act directs us to do just that.

I would be the first to admit that federally-mandated wetlands protection programs are complex and confusing, and I hope that today I can clarify some of EPA's responsibilities.

The two most important federal wetlands programs that directly affect farmers are Section 404 of the Clean Water Act and the Swampbuster provision of the Farm Bill, which was the product of environmental group involvement with the '85 Farm Bill.

Admittedly, the 404 program is highly controversial and hotly debated. It has been so since the outset. It touches sensitive issues of property rights. It is one of few programs where the federal government directly regulates the actions of individuals and small enterprises. EPA certainly recognizes the need to be sensitive to property rights and the legitimate expectations of citizens.

But, perhaps the most important information for farmers is that most routine, ongoing farming activities do not require permits. Farming activities that occur in non-wetland areas or that do not involve discharges of dredged or fill material into waters of the United States do not require permits. Many ongoing normal farming activities that do involve such discharges are exempted from Section 404 regulation, and do not require notification or submission of a permit application to the Corps of Engineers. In order to be exempt, the farming activities must be part of an ongoing farming operation and cannot be associated with bringing a wetland into agricultural production or converting an agricultural wetland to a non-wetland area.

Even when activities do fall under the jurisdiction of the Corps, it is quite likely that they will be covered by a general permit. General permits authorize activities in wetlands as long as they cause only minimal adverse environmental effects.

General permits are issued on a nationwide, state, or regional basis. There are numerous general permits issued on state and regional levels; in addition, 36 nationwide general permits will become effective on January 21, 1992. Among these recently amended nationwide permits is one for discharges associated with cranberry production and another for construction of some farm buildings.

In 1990, about 75,000 activities were authorized under general permits. Far fewer activities--only 15,000--required review under the individual permit process. Based on Corps data, fewer than 1% of all activities subject to Corps jurisdiction are denied; also, permit evaluations are completed in less than 60 days for approximately 92 percent of all general and individual permits.

To help people better understand wetlands protection programs EPA established a Wetlands Protection Hotline in 1991. The hotline is staffed by information specialists who are knowledgeable about wetland regulatory programs and policy issues, as well as wetland biology and science. In September alone, we

received 2,352 calls. A little more than 7 percent were from people who identified themselves as interested in wetlands and agricultural issues, and that number is growing every day. I encourage anyone with questions on wetlands to call the Hotline: 1-800-832-7828.

In his August wetlands announcement, the President indicated his support for legislation to regulate wetland losses due to drainage and to make it easier for states to implement the 404 program on behalf of the federal government. These are the only positions that the Administration has taken on the legislative proposals currently before Congress. EPA is, however, working with other federal agencies and conferring with "customers" to evaluate needs and opportunities.

In summary, I offer you a challenge.

The Clean Water Act reauthorization is an opportunity for us all. It provides a chance for us to refresh and renew our commitment to the vision. It provides a chance to build a shared understanding of where we are in progress towards that vision. Finally, it provides a chance for all of us to get involved--join the debate. The clean water arena is not just for environmentalists. Clean water is a basic human need. We all rely on it. Join the debate.



**EXPECTED IMPACTS OF CLEAN WATER LEGISLATION
ON AGRICULTURE**

Jeffrey A. Zinn¹
Congressional Research Service

INTRODUCTION

The Times, They Are A Changing, the title of Bob Dylan's musical hit of the 1960s, could also be the title of an assessment of resource conservation policy in recent years. It should not be a surprise that most analysts now discuss agriculture and the environment rather than resource conservation. This change conveys two messages. One is that the resource issues in agriculture now embrace a much broader array of environmental topics than those traditionally associated with resource conservation. Second, while resource conservation was largely a topic handled internally by the agricultural community, in policy, institutional, and applied senses, agriculture and the environment is increasingly directed by forces and parties outside the agriculture community who have different, and sometimes less compatible goals.

This presentation is not about the semantics of agricultural conservation or old music. I identify some points which will enable you to think about the current clean water debate in the context of broader trends and forces that will continue to drive changes in agricultural policy. These comments are made around three basic conclusions.

1. The 1990s will be a period of rapid and sometimes stressful change for both the agriculture sector and agriculture policy with regard to the environment.
2. Forces unrelated to agriculture will increasingly impinge on the national agricultural policy process.
3. The Clean Water Act should not be viewed in isolation. The outcome of the Clean Water Act reauthorization will not only result in specific water quality legislation, but will also show how this larger policy context is evolving, which of the competing interests are on the

¹ The views and opinions expressed are the author's and do not necessarily reflect the findings or conclusions of the Congressional Research Service or the Library of Congress.

ascendancy and on the decline, and what is likely to happen in related national policy debates.

THE 1990s: A PERIOD OF RAPID CHANGE

Agriculture is changing in many ways. The agriculture sector's structure continues to change from a concentration of middle sized farms a few decades ago, to relatively fewer of these units, many small producing units and a growing number of large and very large units. In addition, the portion of the country's population that is employed in agricultural production continues to decline, while the average size of the producing units continues to grow. These trends, anticipated to continue, contribute to the growing public consensus that agriculture should no longer receive special policy treatment that exempts it from many of the impositions placed on other businesses. In the environmental area, this transition has been remarkably swift during the past several years. There should be no debate about whether it will continue; the most important questions revolve around the form and direction of this transition.

The transition in the environmental arena from special treatment to just another business is reinforced by prodigious amounts of new information and analyses about many aspects of agriculture. These data come from programs both within and outside the Department. Within the Department, the National Resource Inventory and other national, regional, or more specialized surveys have provided new grist for analysts. These data have been fed into analysis for the National Conservation Program and other studies, which have provided insights about current agricultural resource trends. Also, these data sets are providing information about trends over time. More of the analysis is being conducted by interests outside the Department, including other agencies and environmental groups, who are looking for different relationships and sometimes drawing different conclusions.

In the national policy arena, the period of rapid change in environmental topics is manifested in several ways. In the Department, implementation of the Water Quality Initiative and the contents of the Second National Program for Soil and Water Conservation are probably the two best recent expressions. It is important to realize, however, that Congress has given only luke-warm endorsement to the Water Quality Initiative, and little formal recognition to the national program. The weakness of this endorsement by Congress should trouble supporters of the Department's efforts.

In Congress, the transition is most fully expressed in the conservation provisions of the 1985 and 1990 farm bills. For the last several years, Congress has been confronted by the basic question of whether the Department's present approach to environmental topics is adequate. The congressional answer appears to lean to the negative, based on two aspects of the two farm bills; micromanagement and the search for new approaches.

Both laws micromanage Department efforts, with numerous deadlines, precise implementation instructions in bill and report language, and a blizzard

of reports to Congress. Micromanagement is generally a product of mistrust; Congress is telling USDA that "we can't depend on you to do this right, so we are going to tell you how it is to be done in excruciating detail". The 1990 bill was reportedly was the longest one ever reported to the Senate, and environmental provisions made more than their fair share of contributions to the verbiage. But micromanagement also has a real cost, because it ties up human and financial resources to meet all the deadlines, and because it can constrain the Department in applying its technical expertise in the most effective manner.

The successful search for new approaches to conservation will be the major policy legacy of the 1985 farm bill's conservation title. Over a long time period, it will prove to be far more important than the Conservation Reserve Program. The 1985 law initiated disincentive programs, and opened the door to approaches that resemble regulation to some, even if they are, in fact, matters of choice. The new approach also is, in essence, targeting, for the rules apply whenever certain conditions about erodibility or wetlands are met. While the 1990 law did not move beyond compliance to more direct regulation, debate over provisions did demonstrate that forces outside agriculture will increasingly impinge on agriculture.

AGRICULTURAL POLICY AND OUTSIDE FORCES

Many forces impinge on agriculture, but this discussion is limited to selected ones that are a part of the national policy process and affect agriculture through the activities of Congress. The major one that gets so much attention is the ascendancy of environmental interests as a force in casting agricultural policy. The environmental groups have been so effective, in part, because they have learned about how agriculture policy is formulated, and used that education to good advantage to influence the political process. Also, a growing number of environmental groups are becoming involved in agriculture policy. This resulted in some fragmentation among these groups in 1990, but it also expanded the overall political power base of this set of interests. Future trends in their power will continue to be tied to evidence about levels and possible consequences of environmental degradation associated with agriculture.

A second force is the Federal budget deficit. Given the forecast progression of the deficit, it is hard to imagine that USDA will have as many employees in 10 years. It also seems likely that agencies that deal with farmer-specific programs will probably lose staff and funds to agencies that implement programs that benefit a broader cross section of interests and constituencies in rural America. Budget constraints will also demand that programs be more effective, both costing less and being more efficient. Policy makers will wrangle over whether constituents should be penalized with reduced levels of service because either they have fewer problems or because they have been more successful at solving problems. A growing portion of this debate will revolve around whether the USDA program delivery system is sufficiently efficient and cost-effective.

A third force is redistricting. As the population grays and migrates to the coasts and the sunbelt, rural agricultural America will continue to lose its political clout. In Congress, this change will be more apparent in the House where three outcomes can be anticipated: (1) fewer members will be interested in agriculture as a priority, (2) agriculture's voting block will continue to shrink, and (3) agriculture will increasingly compete with other regional rather than national issues and constituencies, perhaps more akin to many of the western public resource topics than to national topics like defense and education. It is also important to remember that political power in Congress is usually retained long after it might seem that it should have declined. In the case of agriculture and the environment, this will be measured by the ability of the agriculture community to continue to assert that some special treatment and exemptions from requirements placed on other businesses should continue.

A final important force is the increased mixing of agriculture with other issues. In the environmental area, the Clean Water Act reauthorization is intertwined with other resource policy topics including implementation of the Coastal Zone Management Act amendments, passed last year, and resolution of the wetland protection debate, among others. Just as the environmentalists have learned the agriculture policy game, agricultural interests must now learn and play in policy games on fields that are unfamiliar. So far, it appears that the environmental community has learned its lessons better than the agriculture community, and the outcome of the Clean Water debate, will be another measure of the relative effectiveness of this self-training effort.

THE CLEAN WATER ACT IN CONTEXT

The Clean Water Act reauthorization must be viewed as one piece of a larger puzzle. But it is an important piece because non point pollution is front and center in the Clean Water debate. You have all seen or heard statistics that attribute large portions of this problem to agricultural activities that do not need to be repeated. The main vehicle to deal with non point pollution has been section 319 of the act, which requires States to assess non point problems, to develop plans, and to implement those plans, drawing on Federal grants.

It is not at all clear what will emerge for agriculture from the Clean Water Act debate. The 319 program is likely to be amended to address questions about adequate funding, updating state assessments to remain current with problems, and strengthening Federal requirements. Stronger Federal requirements could require States to develop programs that emphasize the impacts of land use practices on water quality, and direct them to provide specific guidance on measures or practices to limit these practices. Provisions in the Coastal Zone Management Act reauthorization last year provide a model for estuarine and coastal waters that Congress may choose to apply more broadly; implementation of these provisions has been of some concern in the agricultural community.

Another section of the Clean Water Act, section 404, has received attention because of various administration interpretations and decisions regarding wetlands. Decisions here will affect agriculture. The wetlands protection debate

is somewhat outside the scope of this discussion, but it is important to note that this debate has created a forum to discuss how far the Federal government can or should go to intervene in placing limits on the use of private property when societal values are involved. The outcome of this debate and of pending court cases are likely to provide more direction about both the appropriateness and limits of public intervention.

Another law up for reauthorization next year is the Endangered Species Act. This law is perhaps the strongest of all environment statutes because it has no flexibility in determining whether a plant or animal should be designated. Much of the reauthorization debate will be about flexibility, driven by concerns about the impacts of designating fish and owl populations in the Pacific Northwest. Agriculture will be one of many interests seeking mechanisms that add flexibility to the designation process.

CONCLUDING COMMENTS

What results can we expect from the Clean Water Act debate next year? First, there may not be any results. Considering the full legislative agendas of the key committees and the tight schedule of Congress in an election year, wide ranging legislative proposals, such as this, have the potential to get delayed by any one of numerous issues. If this one starts to bog down, Congress could move on to other issues, and put off reauthorization for another year.

In the Clean Water debate, regardless of how it is resolved, USDA could easily become an issue. This debate would revolve around the flexibility and the perceived willingness of USDA to change rapidly to meet new issues and policy instructions. Supporters of agriculture will point to implementation of the 1985 and 1990 farm bills, as well as internal changes such as the Water Quality Initiative, and claim that it is already doing more and moving rapidly. Critics will look at the same set of experiences and conclude that USDA will not be an effective leader in addressing the non point problem. If the institution becomes the issue, then it has much to lose, as measured by credibility and political clout.

The USDA conservation agencies have already been asked to go through a metamorphosis since 1985. This is most true of the Soil Conservation Service, but certainly applies to a lesser degree to several other agencies. The new programs and expanded responsibilities have placed intense pressure on the agencies, especially at the field level, and it is still unclear both how far and how effective these agencies will be in making the transition. Part of this pressure comes from the expanded workload, and part comes from requiring the staff to venture from the familiar and comfortable into new relationships with producers and into different topics. Water quality provisions in the 1990 farm bill certainly contribute to this change; it is unclear how far Clean Water legislation might further define these changes.

The results of the Clean Water debate that affect agriculture are not likely to create totally new roles for USDA agencies, but they are likely to change the

context of activities that USDA is involved in. The key question is whether USDA and its programs will be made an integral part of the solutions that emerge in the reauthorization, or whether the provisions will look primarily to other agencies and different programs to address non point pollution problems.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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Outlook '92

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BIODEGRADABLE POLYMERS

Rhonda L. Brooks
Vice President, Marketing and Sales
Novon Products Group

Thank you. At Warner-Lambert's Novon Products Group, we're building an entirely new business based on agricultural resources. We are commercializing the first polymeric material made from starch that biodegrades fully and completely -- the NOVON™ family of specialty polymers. NOVON™ is an entirely new materials technology with tremendous potential for use in packaging and other applications across a number of industries.

NOVON™ is produced in pellet form. Its prime component is an annually renewable sustainable agricultural resource -- starch from corn and potatoes.

The patented NOVON™ technology is the ability to take starch and specially process it to produce a useable polymeric material. Through the use of non-toxic, biodegradable additives, this starch polymer can also be modified to provide a wide range of properties.

While NOVON™ polymers provide the performance of plastic during fabrication and use, they will decompose like paper, under the correct conditions, leaving no synthetic or toxic residues.

It's important to remember that a NOVON™ polymer is not a plastic. It is not a starch-filled plastic or a starch additive for other non-degradable plastics. NOVON™ polymers contain no polyethylene or other non-degradable polymers.

As a result. . .

It is a material that can be composted without leaving plastic fragments or other synthetic residues. Composting can help keep waste out of overburdened landfills. . .

Novon is a material that will decompose in sewage treatment plants, helping to limit ocean and beach litter.

Novon's environmental performance is supported by more than a million dollars of research by leading universities and testing laboratories, covering degradability, toxicity and purity.

We are in the process of building a production plant at Warner-Lambert's facilities in Rockford, Illinois. The plant will be up and running by the end of this year with an annual capacity of 100 million pounds.

We did not get here overnight. Our development effort started in the early 1980's, when researchers in Warner-Lambert's pharmaceutical group were investigating methods and materials to make gelatin capsules more efficiently. During their experiments they found that specially processed starch could be injection molded - a feat that had never been done before.

Today, Warner-Lambert has a line of pharmaceutical capsules made using NOVON™ polymer technology, called CAPILL®. But the development of NOVON™ polymers didn't stop with capsules. Once the company understood the properties and full potential for NOVON™ polymers, additional research was started at Novon's European headquarters in Arlesheim, Switzerland.

In addition to the facilities in Arlesheim and in Rockford, the Novon Products Group, formed last year, is based in Morris Plains, New Jersey, at Warner-Lambert's worldwide headquarters. Morris Plains houses Novon's research center and U.S. customer application development teams, giving us worldwide presence.

To further strengthen our capabilities, we've entered into a technology and supply agreement with National Starch and Chemical Company earlier this year. National Starch will supply raw materials for NOVON™ polymers and provide research and development to broaden the performance capabilities of Novon materials. We are well positioned to bring NOVON™ polymer technology to market.

I'm sure your next question is "How many millions of bushels of corn will Novon Products buy next year"? That is not a simple question to answer.

You see, in our sophisticated, environmentally-conscious world, simply calling a material natural or "annually-renewable" or biodegradable or compostable does not guarantee sales.

In fact, it might even get you sued for misleading the consumer. Even degradable materials won't go away in a landfill. You might make the front page of The Washington Post for calling your material biodegradable if you can't prove it legitimately.

So why would Warner-Lambert or the USDA or any other company work on biodegradable materials like NOVON™?

The answer to this question can be found in the way the United States handles trash.

There are many ways to handle our garbage better. And some of these solutions are compatible with biodegradable materials made from agricultural resources. This is where you all can help.

I'm sure you've heard of the EPA's waste management hierarchy. It calls for source reduction, followed by recycling, and then, waste to energy incineration and landfilling. Keep in mind, that today in the United States 73 percent of our trash is landfilled and approximately 14 percent is incinerated.

However, the truth of the matter is that incineration and landfilling are on the way out. By the year 2000, more than fifty percent of the country's current landfill capacity will be exhausted. And, as we all know, very few new permits are being granted for incinerators or landfills because of increased regulations and citizens' concerns for emissions and groundwater contamination.

Under the EPA hierarchy, that leaves reduce and recycle. Most customers we deal with are already making efforts to reduce the amount of packaging in their products. However, they report that consumer convenience and safety, particularly for food and health care products, limit the amount of reduction they can do.

In the area of recycling, many communities are already active, recycling glass, aluminum and newspapers and some plastics.

And these efforts will grow as more manufacturers like Proctor & Gamble demand recycled materials for their packaging. However, there are factors which will limit the ultimate rate of plastic and paper recyclability. There are many applications that don't lend themselves to recycling. This includes food-soiled packaging, unsorted food service waste, multi-material, composite packaging such as juice boxes, and low density/low value styrene foam. All are costly to collect, transport and recycle. So, in theory, soiled papers or plastic food containers, foam peanuts or multi-layer packages are recyclable. In practice they're not.

Given these problems, let's look at waste from nature's perspective. A significant portion of today's trash is biodegradable - 25 percent of our municipal waste is actually yard waste and food scraps - the upper right portion on this slide. Another 25 percent is paper waste that is soiled or food contaminated and therefore not recyclable. All of a sudden you have compelling reasons to look beyond recycling to divert as much as 50 percent of the waste stream from going to landfills, because it is organic and readily biodegradable.

Like a growing number of environmentalists, municipal officials and manufacturers, we believe one promising solution is source separated composting.

This is why we are spending considerable time working with federal, state and municipal officials along with leading companies in the packaging and food industries to understand the fit of biodegradable materials and the economics of alternate waste management techniques such as composting. We can have the best material in the world based on starch or other agricultural resources, but if the infrastructure to collect and manage organic wastes doesn't develop, we won't sell NOVON™ and you won't sell crops for this added value use.

As you know, composting is nature's way of recycling - returning carbon to the soil to be reused. In many parts of the country, it is less expensive than landfilling or incineration. It does not require a lot of fuel or energy. It can produce a high quality product which can be put back onto the soil. The only problem is we don't compost enough.

This is where we can use the support of the farm community. Look into the value of clean compost in your farming activities. Support the concept of compost as a fertilizer supplement...or even a replacement. Consider the value of clean compost to help rebuild eroded soils. Your interest in - and demand for - compost products will help grow the infrastructure for many crop-based products like NOVON.

The first level of infrastructure development is already occurring in back yards and on farms and at community yard waste composting centers. There are currently over 1,500 municipal yard waste composting centers in the U.S. Sixteen states to date have banned yard wastes from landfills altogether, driving the development of more composting capacity.

The humus from these composting centers, depending on its quality, can be sold as a soil conditioner for a wide range of applications.

The private sector is also responding with some very innovative approaches. In the Northeast, supermarkets such as Star Markets and Hannaford Brothers, along with local restaurants, are testing composting. There are currently trials in Maine, New Jersey, Michigan and Massachusetts which compost food wastes to create a rich humus.

An example from Pittston, Maine is a company called Compost Connections which has put together a network of small farms to compost restaurant and supermarket wastes.

For \$45 a ton, Compost Connections will pick up your food, vegetable or soiled paper waste (free of any plastics, or other

nondegradables) and send it to farms to be composted. The current capacity is 30 tons per day for wastes within a 50 mile radius of Augusta, Maine. They plan to have other farms signed up very soon to serve the cities of Portland, Waterford and Bath. This concept could work in many other parts of the country. Farmers get paid for taking source-separated, organic wastes and get a valuable soil conditioner for their fields.

Another initiative is being developed by Dr. Ramani Narayan, Michigan State University, and the Michigan Biotechnology Institute. The proposed concept is a composting franchise operation. Source-separated garbage will be collected from quick service restaurants and other sources of clean, organic waste. Participants would then compost these wastes into a clean, high-quality humus.

Dr. Narayan and the Institute are presently looking for interested businesses and suppliers to conduct a demonstration project. This demo project will include, under the supervision of the Agricultural Research Station at Michigan State, the application of the QSR based humus to agricultural crops.

On the opposite side of the spectrum are large scale municipal solid waste composting centers. Some of these systems are very high tech and very expensive, using contained vessels to accelerate the degradation process. According to *BioCycle* magazine, there are ninety additional municipal composting centers in the planning stages.

However, there are two potential roadblocks to the growth and viability of composting: "NIMBY" or "not in my backyard" issues are heard mainly from local citizens complaining about odors coming from composting facilities. Some of the first composting centers were put too close to residential areas and weren't constructed to contain odors.

NIMBY issues stemming from odor problems can be managed with better composting practices and more operator training.

The second issue is more difficult and comes from the wholesale composting of all wastes, without strict source separation of the biodegradable, organic waste.

When recyclable materials such as glass and plastics get composted along with organic materials such as food products, yard waste, and paper, they reduce the quality of the humus or make it unsalable.

Adding to this problem is the presence of toxic materials such as pesticides, heavy metals from rechargeable batteries, and many other materials that can also diminish the quality of humus if source separation is not practiced. These are just some of the reasons that major environmental groups like the Environmental Defense Fund are for source separated composting - where the waste is separated at its point of generation, the home or business - but against mixed municipal waste composting.

Europeans have been composting trash for decades. And it has been working in harmony with recycling. We can learn many valuable lessons from them. Their experiences with mixed MSW (Municipal Solid Waste) composting have not been successful. Their composting plants have not been able to adequately separate commingled wastes on site, allowing large amounts of plastic, glass, metal and toxic materials to be composted.

Because of these past problems, environmentally-conscious European countries like Germany, Holland, and Denmark are shutting down their mixed MSW composting plants. Right now many facilities are shifting over to handle only source separated waste streams. They will of course only allow completely biodegradable wastes and materials to be composted. Therefore, a starch-polyethylene trash bag is unacceptable.

Due to public concerns about the quality and safety of humus, many countries have implemented stringent heavy metal standards. Far tighter than here in the US.

So in order for the US to have a viable wide spread composting system, quality must be assured. While some companies and scientists argue that mixed waste composting facilities have improved sortation techniques, it is clear that source separated composting has the best chance of gaining unequivocal support from compost users, environmentalists, and consumers while not competing with source reduction and recycling.

With these potential waste management approaches in mind, let me touch on some specific applications where a decomposable, agriculture-based material like NOVON can fit. Some of the best opportunities are in packaging commingled with food waste -- such as fast-food packaging. In these applications, packaging based on NOVON™ polymers rather than traditional plastics, could be composted economically along with the food and paper waste. Costly cleaning and sorting makes recycling of these type of plastic and paper materials virtually impossible. Therefore, by switching the plastics to biodegradables, composting can keep the fast food restaurant's waste from the landfill or incinerator.

Another potential use is for personal and health care items. Materials used in sanitary applications are difficult and often undesirable to recycle. Examples include tampon applicators and cotton swabs. With materials like Novon, these items can be made to be flushable and disposed of safely through the sewage system, without causing sewage system blockages or washing up on beaches.

Disposables that might be prone to litter, even golf tees, could be made from NOVON. Not to encourage litter but to help mitigate its negative effects.

This product, a loosefill packaging material called Renature from Storopack, is already on the market. It disintegrates quickly and biodegrades when put in water. It can also be composted.

As a final point, let me stress that the Novon Products Group is committed to market our material in a responsible, environmentally sound manner.

We will work with product and packaging manufacturers to ensure that only responsible advertising and marketing claims are made regarding product disposal and degradability. And we will ensure that our biodegradability claims are backed by objective scientific research that will withstand the scrutiny of the environmentalists. And, we are working with the environmental community, waste management companies, customers and industry groups to develop appropriate disposal systems such as source separated composting, so that an environmental claim made about NOVON™ polymers is meaningful and realistic.

We hope that NOVON™ polymers will prove to be a success story for the agricultural industry. Working with food crops, we can create clean, naturally-based polymeric materials. Our customers can use traditional fabricating processes to create replacements for disposable plastic products. And, working with nature, we can convert solid waste into a valuable soil amendment. Which may, in turn, be used to grow more crops.

Working with nature is a concept whose time has come. It is an example of how America's agricultural resources represent a new business opportunity. Novon is helping to create new links between the agricultural and industrial communities. This alliance could benefit each of us significantly while helping solve one of our nation's key environmental problems.

Thank you.

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ENCAPSULATION OF PESTICIDES IN STARCH

Michael R. McGuire, Research Entomologist
USDA-ARS Plant Polymer Research
National Center for Agricultural Utilization Research
Peoria, Illinois 61604

Weed, insect and pathogen pests of agricultural crops, forestry, horticultural plants and stored grain cause damage estimated at 20 billion dollars in the U. S. This is in spite of chemical control efforts consisting of applying approximately 1 billion pounds of active pesticidal ingredient to crops each year. Most of these pesticides are petroleum derived chemicals that have been accused of causing harm to the environment and to human health. Clearly, efforts to control pests in a socially conscious way can be improved. Only recently, have producers begun moving towards less dependence on chemical input by embracing agronomic practices such as integrated pest management, sustainable agriculture, and organic production. However, some of the pest control tools necessary to maintain a profitable operation within these systems are lacking.

There are several approaches to improving pest control products. First, new pesticides may be developed that have novel characteristics. This is a very expensive proposition, though, as costs may exceed \$100 million from initial discovery to full registration by EPA. Another approach is to develop new and improved formulations of existing pest control products. Some of these new formulations involve the use of cornstarch as an encapsulating agent. Research over the past several years at the National Center for Agricultural Utilization Research, a USDA-Agricultural Research Service facility, has resulted in many types of starch formulations that have characteristics amenable to more judicious use of both chemical and biological pesticides. This discussion will review some of the advancements made in this area.

WHY STARCH?

Cornstarch is an extremely abundant commodity. Annually the U.S. corn crop contains about 250-300 billion pounds of starch. Although the corn wet millers process approximately 1 billion bushels of corn to produce about 32 billion pounds of starch, only about 4-5 billion pounds are used in non-food areas. The corn dry millers process about 200 million bushels

TABLE 1: Corn production and use (million bushels).

<u>Year</u>	<u>Production</u>	<u>Processed (food, alcohol, other)</u>	<u>Export</u>	<u>Surplus</u>
80/81	6,639	698	2,391	1,392
81/82	8,119	778	1,997	2,537
82/83	8,235	880	1,821	3,523
83/84	4,174	956	1,886	1,006
84/85	7,672	1,070	1,850	1,648
85/86	8,875	1,140	1,227	4,040
86/87	8,226	1,175	1,492	4,882
87/88	7,131	1,212	1,716	4,259
88/89	4,928	1,232	2,028	1,930
89/90 ¹	7,525	1,271	2,369	1,345
90/91 ²	7,933	1,300	1,850	1,260

1. Preliminary

2. Projected

Source: USDA

to produce about 1 billion pounds of flour. Over the last eleven years, the corn carry-over surplus has averaged 2.5 billion bushels, exceeding 4 billion bushels in each of the years 1985-1987 (Table 1). Besides availability, starch is a very inexpensive (approximately 10 cents/pound) and easily modified polymer. Corn flour may also be used in place of starch to encapsulate pest control agents. While the protein in flour may inhibit certain encapsulation properties, it may offer additional advantages as well. Both flour and starch are 100% biodegradable, digestible by most leaf-feeding insects and may serve as excellent formulation materials.

ENCAPSULATION THEORY

Commercial non-encapsulated formulations of pesticides may lose activity quickly in the field due to leaching, volatility, microbial breakdown, adsorption to the soil, and other environmental factors. To compensate for these factors, pesticides are applied at a much higher rate than is needed to actually control the pest. This excess not only drives up the cost of application but may lead to environmental damage or toxicity to the crop or other non-target organisms. Encapsulation systems that are capable of reducing loss of activity should aid in the development of formulations containing less active agent with no loss of efficacy. Of course, not all pesticides need encapsulation to be effective. Generally, encapsulation increases the cost of the pesticide to the consumer. Therefore, the benefits of encapsulation in terms of economic and social costs must outweigh the cost of manufacture. Criteria that must be considered include: chemical and physical aspects of the active agent, e.g. volatility or corrosiveness; environmental stability due to sunlight, microbial degradation, etc.; human toxicity concerns;

toxicity to the crop or the environment; cost of the pesticide, i.e. can encapsulation reduce repeat applications (Shasha in press).

There are many types of encapsulation processes currently in use. One often thinks of a membrane-coated particle which contains all the active ingredient within. Starch encapsulation is not like this. Rather, the process of starch encapsulation results in a matrix with the active agent dispersed throughout and on the outside of the resulting mass. Due to the molecular structure of starch, the matrix will swell but not dissolve in water. This characteristic leads to sustained release of the active agent over time. The rate of release can be controlled by altering the starch or flour type, the encapsulation conditions, and by addition of other encapsulation ingredients. A zero-order release rate in which a consistent and constant amount of agent is released over time is desired. The amount should be in high enough concentration to kill the target pest but low enough to reduce environmental and health concerns (Fig 1). In addition to release of volatile or water soluble chemical pesticides, the starch matrices also serve as excellent baits for insects. These baits may contain chemical or biological insecticides and, due to the nature of the encapsulation procedure, the starch can extend the activity of agents that normally break down rapidly under environmental conditions.

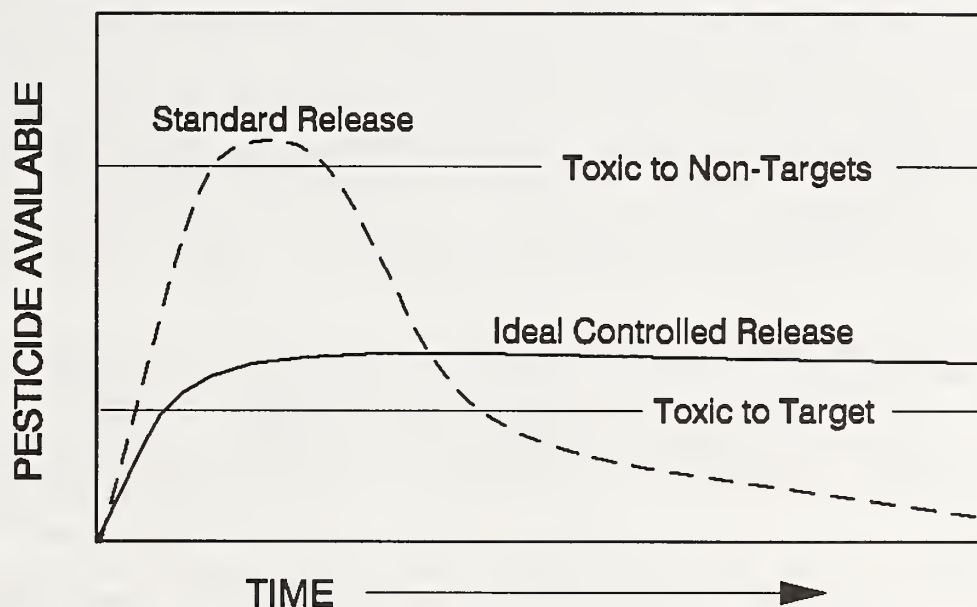


Figure 1. Theoretical fate of conventional and controlled release formulations of pesticides when applied to the same environment under the same conditions. Conventional formulations release most of their active ingredients immediately which may cause environmental damage through contamination of groundwater or damage to non-target organisms. Controlled release formulations, on the other hand, provide a sustained and usually lower rate of release over a longer period of time.

METHODS OF ENCAPSULATION

Starch may be used to make granular or sprayable formulations suitable for chemical or microbial pesticides (Table 2). While both sprayable and granular formulations can be used for soil and foliar applications, granular products are used mainly for soil application of pesticides whereas sprayables are used mainly for foliar application. Granular formulations have been of most interest while sprayable formulations have just recently been developed. Following is a description of the various types of formulations.

Table 2: Starch formulations of pesticides developed at NCAUR.

<u>For Chemicals (All Granular)</u>	<u>For Microbials</u>
Xanthide Process	Pregelatinized Granules
Borate Process	Pregelatinized Sprayable
Calcium Process	Adherent Granules
Cooked Starch	

Granular formulations made with chemical crosslinking agents. The first descriptions of using starch for entrapment of agricultural chemicals involved the use of chemicals such as sodium hydroxide or carbon disulfide to solubilize the starch. Herbicides could then be added and the solution crosslinked with a suitable agent such as xanthide, borate or calcium to yield a solid, single mass that could then be ground to produce granules of a desired size. The resulting granules contained herbicide distributed throughout the matrix. Field and greenhouse work revealed excellent efficacy, sustained release and reduced volatility of encapsulated herbicides. Although pilot-scale production was developed, these processes never received commercial interest, probably due to the harsh chemicals used (Schreiber et al. 1987).

Granular formulations made with cooked starch. Starch can also be solubilized by cooking at high temperature. When allowed to cool, branches of the starch molecule crosslink and, similarly become insoluble. Therefore, starch was cooked in a jet cooker at temperatures ranging from 90-143°C and then transferred to a mixer. While the starch paste was still hot, herbicide was added and mixed thoroughly. The paste was allowed to cool to a solid which was then ground to the desired particle size. Taken one step further, starch encapsulation can also be achieved in an extruder. Through the proper application of heat, water addition, and active agent addition, a product can be extruded in a continuous system such that the resulting product is a starch-encapsulated herbicide (Wing et al. 1991). Laboratory studies with these granules demonstrated reduced leaching of herbicides in columns compared to herbicides in commercial formulations. In 1990, multi hundred pound batches of three herbicides were prepared and tested in the field under a pilot project designed to evaluate the effectiveness of these starch

formulations. Patent applications resulting from this work have received considerable interest from industry and licensing of the technology is being pursued.

Granular formulations made with pregelatinized starch. Although chemicals make up the vast majority of pesticides sold, biological pesticides are beginning to increase in importance. Concerns about groundwater pollution, non-target toxicity, and human health have prompted many companies to begin developing microbial pesticides. These pesticides, most notably Bacillus thuringiensis (Bt), an insecticide, are generally effective against a small range of pests and are generally non-toxic to other organisms. While the above encapsulation methods work well with chemical pesticides, microbials will not tolerate either harsh chemical treatments or elevated temperatures. However, it is still possible to use starch as an encapsulating agent. Commercially available products called pregelatinized starch (or flour) work very well with microbial insecticides. These starches are prepared by subjecting cornstarch or flour to high heat in the presence of water. Water removal results in a dry powder that, upon mixing with relatively small amounts of cold water, becomes highly dispersed, almost solubilized. After a short time, the starch molecules crosslink, finishing the gelling reaction. Of course, active agents can be added to the water before addition of the starch. The resulting mass then, contains active agent entrapped throughout the starch matrix. With this process, living agents survive well and the starch will protect the agent after application in field conditions. The versatility and simplicity of this process allows for incorporation of many kinds of compounds. Field studies have demonstrated that sunlight screens that absorb damaging ultraviolet wavelengths extend activity of UV sensitive compounds or organisms when incorporated during the starch formulation process. For example, Bt when incorporated into starch granules without any additive, lost all activity within four days. If Congo red was added to the formulation, however, Bt activity remained for up to 12 days when exposed to direct sunlight (Dunkle and Shasha 1988). Feeding stimulants, attractants, or repellents that affect insect behavior have also been used in the starch formulation such that the insect is easier to control with less active ingredient. When the commercial feeding stimulant COAX was added to the formulation, the amount of Bt could be reduced by three fourths the recommended rate with excellent control of European corn borer larvae in the field (McGuire et al. 1990).

Currently, several companies have expressed an interest in this technology and licensing activities are taking place. Technology utilizing the extruder as well as simply using pregelatinized starches and flours have gained the attention of industry who, we anticipate, will commercialize these novel formulations.

Sprayable formulations. Although granular formulations are extremely efficient methods of distributing pesticides, they only make up about 10% of the pesticide market. The remainder of the market is

composed primarily of sprayable formulations. By adding pregelatinized starch in low concentrations to spray tanks, the resulting solution is sprayable. Then, as the starch crosslinks after spraying, a film is formed encapsulating the pesticide directly on the leaf or soil surface. This film can last from 1 to 21 days under greenhouse conditions depending on the type of pregelatinized starch used and on the types of other compounds that are also added. For example, if sugar is added to the starch prior to mixing with water, the sugar not only helps disperse the starch but it also imparts a sticking characteristic to the film. Formulations of Bt containing the sugar-starch combination applied to cotton leaves in the greenhouse imparted protection for more than seven days longer than formulations lacking the sugar and starch. Additionally, the sugar-starch combination appears to inhibit washoff by rainfall. The alkali conditions on the cotton leaf surface are apparently detrimental to survival of Bt. The presence of the sugar-starch solution, however, appears to inhibit breakdown of the insecticidal activity, probably due to the excellent buffering capacity of the starch (McGuire and Shasha 1990).

This technology has also received industry interest as the patent is exclusively licensed to a company. Again, we hope to see the technology commercialized in the near future.

Adherent granules. A very recent development in our laboratories has led to the discovery of granules that, when applied to wet surfaces will adhere to those surfaces. Upon drying, the granules remain stuck and resist washoff due to simulated rainfall in the greenhouse. There are many potential uses for this type of formulation where increased residual activity and decreased amounts of pesticide are desired. While this work must be considered preliminary, it demonstrates the versatility of starch and flour in terms of their usefulness in agricultural formulations of pesticides.

POTENTIAL ECONOMICS OF STARCH ENCAPSULATION

Because none of the starch encapsulation technology has reached the marketplace, we can only speculate as to how much starch will actually be used. However, one billion pounds of active ingredient probably represents 10-20 billion pounds of formulated product. Easy calculations can then be made to determine, based on market percentages, how much starch may be used. It is up to industry to determine how economical and effective the starch encapsulation process will be with their various products and applications.

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Outlook '92

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SOY PRINTING INK

H. Wilson Cunningham
Vice President/Technical Research, ANPA

How many people here remember 1974 when getting a tankful of gasoline took on more importance than your annual income, the good life and who is playing in the Superbowl? The long gasoline lines were repeated in 1978. While you were waiting to get that tank of foreign oil, newspapers were faced with the dilemma of where to get the next tank of ink. Freedom of the press was being restricted by foreign governments.

What is the relationship between gasoline and printing ink? The availability and price of both products are dependent on petroleum. A printing ink used by newspapers contains between 55 to 85 percent oil. Remaining percentages are petroleum-based chemical products such as resins and pigments. No available oil translates into no available ink.

After being caught short twice in four years, newspaper publishers commissioned its trade association, ANPA to investigate the possibility of developing a non petroleum-based printing ink. The search began in 1980 and continued through 1986. Along the way, over 2,000 combinations of natural products were tried. Some were total failures and some like the use of Tall oil, a byproduct of papermaking, resulted in a patentable ink formulation.

The Tall oil ink violated the simple criteria of a successful newspaper product and the search continued to find the perfect oil. Several criteria that all new ink products in the newspaper market must meet are:

- The success of a new ink in the newspaper industry requires that it prints well without modification of equipment or procedures in both letterpress and lithographic newspapers. In other words, it has to work the same, has to look the same, and has to be handled in the same matter. Working the same is the most important criteria. The daily deadline must be met and the ink cannot be the cause of a missed deadline
- The newspaper production environment places severe demands on the ink. Newspaper presses print faster and on the cheapest

substrata than any other printing industry. A large metropolitan newspaper press can achieve speeds of greater than 2,200 feet per minute. At this speed, the press is producing 20 papers per second

- The news ink never dries. Upon transfer to the paper, the ink is first forced into the surface of the paper by the pressure of the printing nip. The ink pigment is then drawn further into the surface by the capillary absorption of the oil into the paper mat. Any characteristic of the oil which inhibits the penetration of the pigment or causes the ink to partially dry on moving press parts is considered unacceptable
- The product must cost the same.

Why soybean oil? First the chemistry and later the economics.

Letterpress printing is less demanding on the ink so a successful ink substitute had to be formulated for the requirements of the lithographic process. The lithographic process involves a complex physical and chemical interaction between the ink and the printing plate. The lithographic printing plate has two chemically distinct regions. The first region is known as the image area which is oil receptive. The non-image area or void areas are water receptive. Water is added to the ink and the formation of a specific type of water-in-oil emulsion is required to help split the ink between these two areas on the plate. A minimum content of free fatty acids or other hydrophylic compounds is necessary for emulsification control. Alkaline refined soybean oil meets these requirements.

Another requirement of the oil is the ability to dissolve the resin and then release it as the oil is absorbed into the paper. Resins serve several functions in the ink. The resins increase the amount of pigment that can be held in suspension by the oil. This is particularly important for offset inks which print a very thin film. The resin encapsulates the pigment on the printed page and reduces the amount of pigment that rubs off on the hands of the reader. The resins also impart important rheological properties to the ink. Rheology is the interaction of the viscosity, surface adhesion, and dispersion forces within the ink. Soybean oil has good solvency of some the newer hydrocarbon resins available for ink making. Soybean oil in some cases is not very good for ink making because it is too good a solvent. The soybean oil refuses to release the resin completely and the resin does not properly harden. This characteristic has hampered the development of some of the newer low and no rub ink formulations for soybean black ink.

The third characteristic of the oil vehicle is viscosity. Oils which are too thin have a tendency to rapidly penetrate the sheet and appear on the other side. Rapid penetration can lead to the resin being isolated on the surface of the sheet. The resulting tacky ball of resin then either pulls the fibers from the newsprint or

builds up on surfaces that the paper must travel over before being cut and fold at the end of the press. Either condition causes a production slow down. The opposite condition is where the oil is too heavy and this isolates the pigment on the surface of the sheet where it can be off onto the reader hands. Soybean oil naturally has the proper viscosity. Sometimes being lucky is better than being good.

The fourth function of the oil in the vehicle is to provide lubrication to moving press parts in the ink distribution system. The oil cannot evaporate or dry on these parts. Soybean oil has a perfect blend of saturated and unsaturated bonds so that it does not readily undergo oxidative condensation in the ink train but will oxidize on the paper and help encapsulate the pigment. This chemical characteristic has helped promote soybean oil inks by lowering the ruboff. In contrast, the use of the more unsaturated linseed oil has only seen limited uses in the news ink formulations because it oxidizes too quickly.

The oil vehicle must not have a color which influences the color of the ink. For black inks this factor is insignificant but is extremely important for color inks. The colorless appearance of soybean oil is a natural for color ink making. The true color of the pigments can show through and the background paper is not discolored.

Any vegetable oil which have these characteristics would be suitable for the production of news inks. Economic factors made soybean oil the oil of choice because soybean oil is generally the cheapest of all the food oils. This is the only reason that other oils such as cottonseed oil, corn oil, or rapeseed oil are not be used in ink making. However, a Canadian ink maker has replaced the soybean oil with rapeseed oil or cranola oil.

The market for soy oil based inks is somewhat controversial. The news ink market is the only market that has the potential of a total conversion from petroleum to soy-based inks. Total conversion is unlikely since soy oil cannot provide the total solvent requirement to formulate the diversity of products needed for today's newspaper product. A rough guess is that soy oil could possibly replace 75 percent of the oil used to formulate news inks. Other types of printing use inks that the characteristics of soy oil is detrimental to the printing quality (heatset) or the inks contain a limited amount of petroleum oil (sheetfed).

To project the impact of printing ink and how it will effect the soy oil market requires a lot of theory and few hard facts:

- The news ink market; 415 million pounds, contains about 311 million pounds of oil. From the above discussion, the maximum amount that has the potential for conversion (75 percent) translates into 233 pounds of soy oil.

- The sheetfed ink market; 146 million pounds, will contain around 25 percent soy oil for a total usage of 36 million pounds of soy oil. If we assume that an average soybean contains 20 percent oil, the ink markets would require about 1.35 billion pounds of soybeans.

Market forces will determine the rate of conversion to all soy ink. The strongest market force within the printing industry is cost. The simple fact is that soy oil costs more than petroleum oil. Performance enhancements realized for soy-based color inks has overcome the five-to-ten percent price differential between soy and petroleum color ink.

Black ink suffers from the chicken-egg syndrome. Black ink cost about 30 percent more because the cost of the oil component is the major price basis for this product. Part of the cost is due to no demand and there is no demand because the product cost too much. Only one newspaper publicly acknowledges that soy oil black may have similar performance enhancements that have been observed for color. Although this newspaper is well respected in the industry, the cost differential and its effect on the bottom line has prevented other newspapers from taking steps toward soy.

Environmental regulations represent the second market force. Soy oil inks have been touted as "environmentally friendly" inks since they are biodegradable, natural products. Quite frankly, biodegradable is not an argument. Any form of liquid/oil borne waste is prohibited from landfill disposals. Ink is guilty by appearance. A barrel of ink looks toxic although the pigments and resins are certified to be in contact with edible foods.

Soy oils inks have two environmental advantages that may encourage more printers to ignore the cost and make the conversion.

Petroleum oils possess a controversial toxicological history. An unfavorable ink safety report may cause some printers to lower their worker's compensation exposure by converting to a non-toxic food oil.

The Clean Air Act amendments of 1990 extended air pollution control regulations to cover the type of printing where soy oil can make an impact. Soy oil's low volatility as compared to petroleum may cause some printers to convert to soy inks as a means to meet emission permit requirements.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture

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Outlook '92

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OUTLOOK FOR TOBACCO

Verner N. Grise
Agricultural Economist
Economic Research Service
U.S. Department of Agriculture

The outlook for U.S. grown tobacco in the early 1990's has changed significantly from that of the mid-1980's. Surplus stocks have been depleted and excess supplies have given way to shortages of some kinds and grades. Leaf production is up and cigarette production has risen because of phenomenal growth in cigarette exports. Still, here in the United States the industry faces continued declines in U.S. consumption of most tobacco products, heightened antismoking activity, declining social acceptance of tobacco use, a greater number of more stringent restrictions on tobacco use, higher federal, state, and local taxes and growing competition from foreign producers.

Looking ahead the next year or two, the outlook remains bright. U.S. cigarette production in 1991 will likely exceed 700 billion units for the second consecutive year. The increased cigarette production stems from the growth in exports to the Far East, the Soviet Union, and prospects for sales to East European countries. On the other hand, domestic cigarette consumption continues to fall. Furthermore, the rate of decline has increased and may average 3 percent or more during the next several years. Leaf exports may rise, but they continue to face obstacles. In addition, it is doubtful that cigarette exports can continue to grow enough to offset declines in domestic consumption. Consequently, within the next few years, both U.S. cigarette and leaf production will likely fall.

The U.S. tobacco outlook for 1991/92 is highlighted by relatively tight domestic supplies. Compared with a year earlier, both U.S. flue-cured and burley prices are higher. The higher prices resulted from increased support prices and relatively tight domestic supplies.

After rising in 1990/91, use may decline in 1991/92. U.S. production in 1991 is down about 1 percent from last year. Together with smaller production, lower carryin stocks reduced supplies about 4 percent to 3.8 billion pounds, with decreases in nearly every type.

The size of the 1992 crop will depend in part on USDA's decisions on quotas, which must be made by December 15 for flue-cured, February 1 for burley, and March 1 for other kinds. The shortening supply and underproduction of burley in recent years suggests that the basic quota might be raised. Flue-cured supplies have fallen, so the flue-cured quota may increase. However, the key for both flue-cured and burley is the level of manufacturer's buying intentions. Effective quotas could rise for both burley and flue-cured.

Production of all tobacco will likely increase next year. Prices in 1992 are difficult to predict, but depend heavily on the quality of the crop, the size and quality of foreign crops, and the level of domestic and foreign demand for cigarettes.

U.S. Cigarette Sales Declining, Exports Up

Cigarettes are the dominant product of the tobacco industry in the United States and most other countries. With an increase in exports, U.S. output will likely exceed 700 billion units again this year (710.3 billion cigarettes were produced in 1990). However, U.S. cigarette consumption may fall about 3 percent this year. Consumption per person 18 and older may drop by 104 cigarettes (5 packs of 20) from 2,817 to 2,713. This would be the lowest consumption since 1942 and 38 percent below the 1963 peak. During the 1970's cigarette smokers shifted toward low-tar brands. However, there was a reversal after 1980. From 1981 to 1985 the low-tar proportion (15 milligrams of tar or less) fell from 60 to 52 percent of domestic sales, but it rose to 57 percent in 1990 where it may remain this year.

Despite an increase in the smoking age population, total consumption of cigarettes is likely to decline again in 1992 and per capita consumption is also likely to decline. Price hikes because of increased manufacturers' costs and their desire to maintain or enhance profits together with tax increases are primary among reasons for the expected decline in both total and per capita consumption. The federal excise tax was increased by 4 cents to 20 cents a pack on January 1, 1991. Also, eleven states and the District of Columbia increased excise taxes an average of 5 cents a pack of 20 in 1991 (North Dakota lowered its tax 1 cent). State taxes now vary from 2.5 cents a pack in Virginia to 46 cents in Hawaii. Many cities and other local governments also tax cigarettes, and four-fifths of the States now impose sales taxes on cigarettes.

Wholesale cigarette prices rose 13 percent from December 1990 to November 1991. Retail prices rose 11 percent from October 1990 to October 1991, the second largest increase in 8 years, and over 3 times the rate of increase in overall consumer prices during the same period. As prices have risen, sales of generic and value-priced cigarettes (priced 15 to 50 percent lower than standard brands) have risen and now account for over 20 percent of U.S. cigarette sales.

Antismoking activity, including legislation, continues to affect the industry. Forty-six States and the District of Columbia have laws that either prohibit smoking in certain places or segregate smokers and nonsmokers. Eighteen states regulate smoking in the workplace of both private and government employees, and thirty-five States regulate smoking in government workplaces. The U.S. General Services Administration (GSA) has implemented stringent smoking restrictions in buildings it

owns and leases. Also, a large number of towns and cities have smoking restrictions. The U.S. Department of Health and Human Services and voluntary health agencies have stepped up efforts to discourage smoking. The cumulative effect of publicity and ordinances on smoking is uncertain, although it almost surely accounts for some of the downward trend in per capita consumption.

The Omnibus Budget Reconciliation Act of 1990 further increased U.S. Federal excise taxes another 4 cents to 24 cents a pack January 1, 1993. In addition, a number of bills have been introduced in the 102nd Congress that could affect cigarette smoking. Most were bills that were first introduced in previous sessions. They included: 1) increasing the Federal excise tax by substantially more than that contained in the Omnibus Budget Reconciliation Act of 1990; 2) adding additional warning labels to the four currently rotated on cigarette packages indicating the addictive nature of nicotine; and 3) requiring the disclosure of additives and ingredients in cigarettes and tobacco products.

Changes in Tobacco Per Cigarette Affects Total Use

Tobacco use in cigarettes remained relatively constant during the 1970's and in 1980 and 1981, despite the gain in cigarette output. For many years, manufacturers could economize in leaf use as they shifted to filtertip brands and used the whole leaf. Later, manufacturers began using various leaf expansion processes and in recent years have used more imported tobacco to stabilize costs. With cigarette production declines from 1981 to 1986, total leaf use fell, but production hikes in 1987 and 1988 boosted leaf use. Leaf use fell in 1989, but rose in 1990 because of an increase in cigarette production. Leaf use in 1991 may decline a little from 1990.

U.S. cigarette manufacturers used an estimated 1,236 million pounds of tobacco (unstemmed processing weight) in cigarettes in 1990. This was about 8 percent above 1989 as total cigarette production rose and leaf use per cigarette climbed. This calendar year, with cigarette production down a little, leaf use may decline.

Manufacturers used an estimated 1.74 pounds of tobacco (unstemmed processing weight) per 1,000 cigarettes produced in 1990, about 3 percent above a year earlier, but considerably below the levels of 15 to 20 years ago. Domestic flue-cured accounts for 38 percent, burley 29 percent, and Maryland 2 percent. Foreign grown was 31 percent; fifteen years earlier it was 15 percent.

Consumption of Other Products Mixed

Consumption of large cigars will likely decline about 4 percent to 2.3 billion in 1991. Production of little cigars--less than 3 pounds per thousand--may increase for the second consecutive year. Large cigar consumption in 1991 is expected to continue the decline that started in 1970. Smoking tobacco consumption continues to fall to record lows annually.

Consumption of chewing tobacco probably continues to be hurt by price hikes, publicity against smokeless products, and legislation enacted in the 1980's. The

legislation requires rotating warning labels on product packages, a ban on radio and television advertising, and imposes a Federal excise tax on chewing tobacco.

Snuff consumption may have risen in 1991. An increase in moist consumption is more than offsetting a decline in dry snuff. Snuff consumption may rise again in 1992.

The factors listed above for chewing tobacco also apply to snuff, but after falling for two years, snuff consumption has risen for four consecutive years. The hike in snuff use in 1988, 1989, 1990, and 1991 may be the result of consumers substituting snuff for smoking as the number of restrictions on smoking grows, stable employment in industries where workers typically use smokeless tobacco, effective industry promotion of snuff products, and possibly the waning of the impact of warning labels, tax hikes, and antismokeless tobacco use publicity.

World Situation

World tobacco production in 1991 is estimated at 15.7 billion pounds (farm sales-weight), up slightly from 1990. The larger 1991 production is mainly due to increases in Malawi, Zimbabwe, Argentina, South Korea, the Philippines, and Yugoslavia.

Of the cigarette types compared with 1990, production of flue-cured is higher in Zimbabwe, India, and Argentina, about unchanged in China, but lower in Brazil and the United States. Burley production is up in the United States, Mexico, Malawi, Argentina, and Italy more than enough to offset reductions in Brazil and Japan. Oriental production is down. The big drop in Turkey more than offset increases in Bulgaria and Yugoslavia.

Production of other types is mixed. Production of dark air- and sun-cured, and fire-cured is down whereas production of light air-cured and dark air cigar is up.

World cigarette production in 1990 reached 5.41 trillion units, or 2 percent above a year earlier. Although consumption is stagnant or declining in the United States, Western Europe, and Canada, increased consumption in China will keep annual production changes positive for the world. In 1990, China's cigarette production was 1.6 trillion pieces, 3 percent above the year earlier.

Despite China's continued annual growth, stagnant consumption in the industrialized nations will likely slow the increase in world cigarette output in future years.

World leaf exports during 1990 rose 5 percent to 3.26 billion pounds. Leaf exports in 1991 are expected to rise further. U.S. leaf exports were up 1 percent in 1990. The slight increase in U.S. exports reflects larger shipments to the European Community. This increase more than offsets a big drop in shipments to Taiwan since inventories had been rebuilt the previous year. U.S. leaf exports through September are above last year, and calendar 1991 exports may exceed those of last season. Zimbabwe also may export more tobacco in 1991, but Brazil may reduce exports because of smaller plantings and unfavorable exchange rates.

U.S. Tobacco Crop Smaller

Tobacco production is down this year in the United States because reduced yields more than offset larger acreage. With higher support prices and relatively tight supplies, flue-cured auction prices were above a year earlier. Still, because of lower production flue-cured cash receipts from the 1991 crop were down about 1 percent. Production costs were higher, but the combined no-net-cost and marketing assessment was unchanged from the no-net-cost assessment of 1 cent a pound a year earlier.

As of November 1, the tobacco crop was forecast at 1.61 billion pounds, down 1 percent from a year earlier. Total supplies for the 1991/92 marketing year were down about 4 percent because of reduced production and carryin.

Price supports for all kinds of tobacco are higher this season. Burley auctions opened November 25. Prices this season are averaging above a year earlier. Cash receipts for the 1991 burley crop may increase 12 to 15 percent.

As of October 1 this year, grower cooperatives held about 240 million pounds of tobacco (farm sales weight), down about 44 percent or 190 million pounds from a year earlier. Unsold loan stocks of about 140 million pounds on October 1 were down by more than half from a year earlier. The reduction came about because of special ("buyout") sales authorized by 1986 tobacco legislation, tightening supplies, and lower takings of burley and flue-cured by cooperatives in recent seasons.

Under 1986 buyout legislation, manufacturers agreed to buy approximately 584 million pounds (farm sales-weight) of 1976-84 flue-cured tobacco over an eight year period and about 308 million pounds of burley (farm sales weight) over a five year period. By the beginning of the fifth year (July, 1990) all burley stocks had been sold. The flue-cured buyout is well ahead of schedule with about 93 percent of eligible stocks sold and over 2 years of the buyout period remaining.

The flue-cured auction season ended on November 7 with prices averaging \$1.725, about 5.2 cents above a year earlier. About 50 million pounds were placed under loan, about two-thirds those of a year earlier and the second largest in 5 years.

Government price support is mandatory for tobacco produced under marketing quotas. Support levels for 1992 have not been set although preliminary figures indicate the flue-cured support will increase between 2 and 3 cents a pound.

Flue-cured and burley price supports are the level for the preceding years adjusted by changes in the 5-year moving average of prices (two-thirds weight) and changes in the cost of production index (one-third weight). Costs include general variable expenditures, but exclude costs of land, quota, risk, overhead, management, marketing contributions, and other costs not directly related to the production of tobacco.

Marketings from the 1991 flue-cured crop and unsold 1990 production were about 4 percent below last year's marketings. Together with a smaller carryover, flue-cured supplies for 1991/92 are about 6 percent below last season. The flue-cured effective quota was 5 percent lower this year. Because of excess production in 1990, 20 to 30

million pounds of 1990 crop tobacco were sold in 1991. Some growers have tobacco in excess of their penalty free quota (103 percent of the effective quota can be marketed without penalty) this year to carry into the 1992 season.

Under the acreage-poundage program, USDA is required to announce the national marketing quota for the 1992 crop of flue-cured tobacco by December 15, 1991. The 1991 basic quota was 878 million pounds, below prospective use. Supplies have declined each of the last 10 years and represent about 2.1 years use. Because this season's marketings are below 1991's effective quota, the effective quota for 1991 will be higher than the basic quota.

Supplies of burley have declined since 1984, and now represent about 2.1 years use. The 1991/92 supply of burley tobacco is about 1 percent below last season.

Carryover stocks on October 1 were 10 percent below a year ago because use exceeded 1990 production. This year's crop increased 10 percent from last year. Acreage is up 14 percent, but yields are down 4 percent.

Last season, disappearance of flue-cured tobacco totaled 1.01 billion pounds, about 6 percent higher than the previous year. Both domestic use and exports rose. The 8 percent increase in domestic disappearance reflects larger cigarette output because of higher exports. Domestic disappearance during 1991/92 will likely decline from 1990/91's higher level because of stable cigarette production and prospects for greater use of foreign-grown leaf.

With tightening supplies and this year's smaller crop, exports may also decline. Also, U.S. exports continue to be hampered by stagnant or declining cigarette consumption in major importing countries, reduced leaf use per cigarette, quotas and tariffs that discriminate against U.S. tobacco, and ample world supplies.

During the year ending September 30, 1991, burley disappearance totaled 674 million pounds, 10 percent above the previous year. Both domestic use and exports were up. Domestic use was up because of increased cigarette production. Exports are up because of a good quality 1990 crop of burley and growing demand for American blended cigarettes throughout the world.

Total use of burley may decline from last season's high level in 1991/92. Both domestic use and exports may decline.

For both flue-cured and burley tobacco, legislation requires that the national quota be based on:

- 1) intended purchases by cigarette manufacturers,
- 2) average annual exports for the 3 preceding years, and
- 3) the amount of tobacco needed to attain the specified reserve stock level (15 percent of the basic quota or 50 million pounds for burley or 100 million pounds for flue-cured). USDA's discretion for setting the quota is limited to no more than 103 percent or less than 97 percent of the amount determined by manufacturer's needs and exports, and the reserve stock level. If a quota reduction is required, it is limited to a maximum of a 10 percent reduction.

Both the basic burley and flue-cured quotas may be increased. Also, the effective burley and flue-cured quotas will likely rise because marketings are below the effective quota this season.

However, the 1992 quota levels depend heavily on purchase intentions of manufacturers. Purchase intentions are the largest item in the formula for setting both flue-cured and burley quotas and they are especially large for burley. Consequently, purchase intentions are extremely important in quota determination and they depend on the industry's assessments of future stock requirements. For flue-cured the export component will be higher but reserve stock levels are slightly above minimum requirements.

Among other types of tobacco, supplies of Maryland, fire-cured, dark air-cured and cigar binder are all down.

Producer referendums will be held in early 1992 to determine if growers of flue-cured desire acreage-poundage quotas and if growers of burley desire poundage quotas. Producer referendums will also be held in early 1992 to determine if growers of Maryland, Virginia sun-cured (type 37), Pennsylvania filler (type 41), Puerto Rico filler (type 46), and cigar binder (types 51-52) desire acreage allotments. Maryland, Pennsylvania filler (type 41), and cigar binder (types 51-52) voted against quotas in previous referenda. Growers of fire-cured (types 21-23), dark air-cured (types 35-36), and cigar filler and binder (types 41-44 and 53-55) approved marketing quotas in previous referenda.

A Look Ahead

U.S. tobacco production in 1992 will likely increase from last year which was the second highest since 1984. Excess supplies have been used up and growing cigarette exports have more than offset declining domestic consumption recently.

Continued large hikes in cigarette wholesale prices, prospects for higher taxes, more and more smoking restrictions, declining social acceptability of tobacco use in the United States, and antismoking activities will almost surely lead to further reductions in domestic cigarette consumption. Cigarette consumption may fall an average of around 3 percent a year over the next several years. In addition, cigarette export growth will likely slow. The decline in domestic cigarette consumption, a likely fall off in the rate of increase in cigarette exports, and greater substitution of foreign-produced for domestically grown tobacco will likely result in declining U.S. cigarette and leaf production by the mid-1990's.



Outlook '92

For Release: Wednesday, December 4, 1991

TOBACCO TAXES, EMPLOYMENT, AND INCOME

By Farrell Delman

President, Tobacco Merchants Association

USDA AGRICULTURE OUTLOOK '92

Washington, DC

December 4, 1991

Fortunately, or unfortunately depending on your position, our understanding of the state of the tobacco industry is never complete without consideration of the industry's tax contribution. Since the taxes generated by tobacco start first with the demand for tobacco products, consumer-based excise taxes tend to get most of the attention. However, since demand is possible only because there is something to consume, that is a supply of tobacco products, a full understanding of tobacco's tax contribution requires us to trace demand back through supply -- to the incomes and jobs that constitute the business of the industry. During the next few minutes we will explore the economic contribution made by the tobacco industry, first at the level of the worldwide industry -- an increasingly important one for the US industry -- and second in the US itself. I will then conclude with a few comments on the growing importance of open foreign markets for tobacco's continuing economic contribution to the US economy.

The Worldwide Business of Tobacco

Less than a century after Columbus discovered America, and tobacco, in 1492, the Portuguese and the Spanish managed to move the commodity to the far reaches of the world. Under the 15th century Treaty of Tordesillas, the Portuguese spread the tobacco custom from the east coast of Central and South America to Japan and China. The Spanish

moved it from the Americas west to the Philippines and China. All this before John Rolfe even began US tobacco production in Jamestown in 1612. In fact, one of the few areas of the world left untouched by the Portuguese and Spanish merchant ships was North America itself, an area left to the English. Thus, before a pound of tobacco was ever produced and exported from what is now the USA, the Chinese, Japanese, Koreans and other Asian populations along with Arabs in the middle east, were all actively cultivating and consuming tobacco. While the US may have been a latecomer to the worldwide business of tobacco, its unique combination of soil, weather, and colonial spirit, coupled with capable English mercantilism, enabled it to make up for lost time. And while China has always surpassed the US in the quantity of tobacco produced, today accounting for nearly one-third of all the tobacco produced and consumed in the world, the US is still the world's best quality producer, both in terms of leaf tobacco as well as cigarettes, the final product that takes over 90% of world leaf supplies.

Tobacco is a large and growing worldwide business:

- Over 120 nations produce tobacco and consumers can be found in every nation;
- Over 150 million people worldwide depend on tobacco for their economic survival;
- Tied end to end, total world cigarette production in 1990 of 5.4 trillion units would make 603 round trips from the earth to the moon;
- Over \$100 billion in excise taxes alone are paid annually to governments around the world, excluding China where because of the socialist structure of production profits and taxes are indistinguishable. Nevertheless, on this measure, China's tobacco industry is that nation's single largest industry accounting for over one-fourth of total government revenues;
- At \$280 billion in worldwide retail value in 1988, also excluding China, the \$100 billion in excise tax contribution alone represents more than \$1 in \$3 paid to government;
- And in spite of accounting for roughly 10% of world consumption, slightly over 500 billion units, US consumers pay well over 10% of world excise taxes, as mature markets tend to tax tobacco relatively more than developing markets;
- Yet all of this economic contribution starts with the production of a leaf that requires less than .3% of all the world's arable land.

Tobacco's Tax Contribution to the US Economy

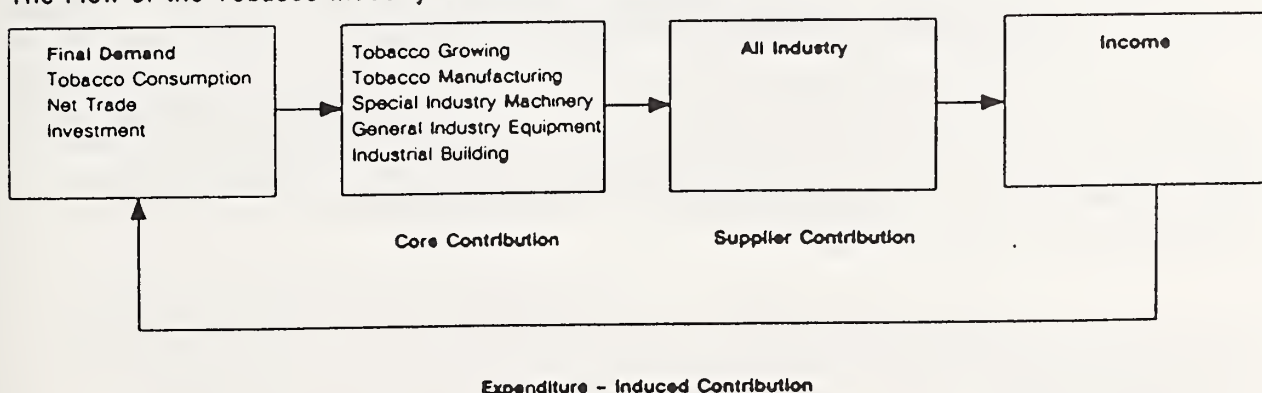
Turning to the United States, the \$44 billion US tobacco industry generates over 2 million jobs, accounts for over \$11 billion in Federal, State, and Local excise and sales tax revenues, billions more in personal income taxes, and contributes nearly \$6 billion in annual trade surplus. Consumer demand for tobacco products generates a complex supply response that begins with some very small tobacco seeds and ends when the consumer purchases the final tobacco product at retail. In the process, Americans are employed and they earn incomes and generate tax revenues at all levels of government.

Through a joint economic project with Wharton Econometric Forecasting Associates (WEFA) of Bala Cynwyd, Pennsylvania, the TMA documents tobacco's economic contribution to the US economy and to the economies of each of the 50 States. With the raw data generated from WEFA's input-output national and State economic models, the TMA annually produces national and State reports that cover the employment, income, and tax effects of the tobacco industry. Data from these reports are then plugged into TMA models to show what would happen to a given State's economy if tobacco consumption were to decline through policy changes such as excise tax increases.

Two weeks ago we received the WEFA data for the 1990 year and managed, in the past few days, to process the tax components of this data. So what you are about to hear and see is now being released for the first time. Unfortunately, we didn't have enough time to process the jobs and income effects for 1990, so here we are left with the data through 1989.

As I stated earlier demand and supply are interrelated: without supply there is no demand and without demand there is no need for supply. Accordingly, tobacco's supply responses begins with consumer demand for tobacco products.

The Flow of the Tobacco Industry's Economic Contribution



- As shown in this chart, demand is composed of the following:
 - Tobacco Consumption in the US market;
 - Net Trade or exports less imports;
 - Investment designed to satisfy consumption in the future.

- With this demand, there is a direct "core & non-core" supply response that comprises the following businessmen:
 - Tobacco Farmers plant and harvest the crop;
 - Tobacco Farm Suppliers provide the seeds, agricultural equipment, bank loans, trucks, bulk-curing barns, fertilizers, chemicals, and a wide range of other materials used in producing the crop;
 - Warehousemen and Government provide services that require investment in trucks, materials handling machinery, computer systems etc.
 - Leaf Dealers purchase and process the tobacco requiring substantial investments in processing, transport, and materials handling equipment, storage devices, plant investments etc.;
 - Shipping Companies move the tobacco leaf abroad requiring a wide range of investments, a share of which is directly attributed to tobacco trade;
 - Manufacturers then produce their leaf blends, requiring substantial plant and equipment investments in primary processing, which are then used in the production of final products, itself requiring further investments in product-making and packaging machinery, not to mention the substantial investments in transport and materials handling equipment;
 - Manufacturer Suppliers provide all of the above;
 - Tobacco Product Distributors and large direct-buy retail chains then purchase, store, and move the final products to retail locations for direct sale to customers again requiring the direct involvement of the financial community, the transport industry, the computer industry and numerous other industries and professional services that cut across the fabric of the economy;
 - Tobacco Retailers then sell these final products to consumers and in the process require expenditures for space, professional services, and a wide range of other goods and services.

And this listing doesn't even include the labor, electricity and other utilities that are directly consumed by these core producers and suppliers in the production and movement of the final products to the consumer.

The WEFA input-output model is designed to capture all of these effects, to show how US industries are linked one-to-another such that output from one industry is an input to another etc.

To determine the full range of tobacco's economic contribution to the US economy, WEFA's economists run their input-output model **WITHOUT** the tobacco sector, that is without all of the above core & supplier elements in the model, something the anti-tobacco groups would no doubt like to see. By pulling out the tobacco sector and running the model, they could then see just how much is contributed by tobacco to the automotive industry, the banking industry, the shipping industry, agriculture, building and construction, and a wide range of other American industries. 1/

But in addition to removing the demand placed on the US economy in the production and distribution of tobacco products, removing the tobacco sector also removes **ALL** of the labor involved in this production and distribution. Not only will industry demand fewer automobiles, but without income available for personal use, so will personal demand for automobiles decline. This effect is called the expenditure-induced effect, what happens when employees who earn their incomes from the tobacco industry no longer have those incomes.

Unlike the core and supplier effects, which are related to the goods and services bought by the tobacco industry in the production and distribution of tobacco products, the "expenditure-induced" effects cut across all sectors and components of the US economy. Just as employees in the textile industry purchase or rent homes and purchase clothing and food, so do tobacco employees. 2/ Unlike the core and supplier direct demand for goods and services, a demand that is related to the production of specific final products, the demand produced by consumer expenditures, from the incomes earned in the tobacco industry, continues to flow around the economy, generating more jobs, incomes, and taxes each time the dollars hit someone else's pocket. For this reason the economic effects of the expenditure-induced effects tend to be greater, both at the national level and at the State levels, than the core and supplier effects.

The Federal Tax Contribution

The results demonstrate the following:

- Tobacco's overall tax contribution grew from \$20.2 billion per year in 1981 to \$40.6 billion per year in 1990. While Federal tobacco excise taxes leaped with the 1983 doubling from 8¢ to 16¢ per pack -- and leaped again no doubt in 1991

with the 2-stage 50% increase that hit all tobacco products -- total tax revenues from this source have been largely stable while other business taxes have increased, especially indirect corporate profits taxes, indirect personal income taxes, and indirect social insurance taxes;

- In fact, as a share of the total \$290.4 billion that was collected from the tobacco business during the period 1981-90, only 14.7% or \$42.68 billion represented tobacco excise taxes. Direct and indirect personal income taxes, at \$31.8 billion and \$57.6 billion respectively, together accounted for 30.7% of the Federal government's take, while direct and indirect corporate profits taxes, at \$11.01 billion and \$56.34 billion respectively, accounted for another 23.2%. Not surprisingly, given the high and growing payroll taxes, the direct and indirect social insurance contribution accounted for 28.1% of tobacco's total tax contribution.
- And in 1990 of the \$40.64 billion collected by the Federal government from tobacco, fully \$12.6 billion came from social insurance and another \$13.7 billion came from personal income taxes -- from the jobs generated by the tobacco industry -- amounts that dwarf the \$6.3 billion in indirect business taxes, of which \$5.2 billion represents the direct Federal excise tax contribution. At 12.8% of the Federal government's total take from tobacco in 1990, the tobacco excise tax share is, nevertheless, consistent with the 12.9% share that it represented in 1981, well below the comparable share at the State and Local level (see below). Furthermore, since the business tax generating power of tobacco is so much larger than the demand-side excise, policies that serve to reduce this business activity will reduce the Federal government's take from tobacco. On the other hand, given growing export business activity and declining domestic consumption, it is likely that the excise share will trend downward in the future shielding more and more of total US cigarette production from those who would like to levy higher Federal excise taxes (see below).
- These tax contributions result from the fact that tobacco's economic contribution is large and growing. Because of America's tobacco industry, the nation's Gross National Product over the period 1980- 89 was \$930 billion more than it would have otherwise been, or roughly \$93 billion per year. The direct core and supplier sectors contributed \$35.2 billion per year on average while the indirect expenditure-induced contribution averaged \$57.7 billion. On an undeflated basis, the GNP contribution grew from \$69.1 billion in 1980 to \$107 billion in 1989. Using a GNP deflator to 1982 dollars, the industry also increased its GNP contribution from \$80.35 billion in 1980 to \$82.8 billion in 1989, though it must be admitted that these gains only really kicked in during the post 1986 period, when cigarette exports began to pick up the slack caused by the 2% annual declines in domestic consumption.

- Also testifying to the growing importance of exports is the changing employment effects: while total direct and indirect employment declined from nearly 3 million jobs in 1980 to 2.8 million in 1986, the 1986-89 period saw increasing employment to well over 3 million jobs by 1989, even as the direct core and supplier industry remained fairly stable at between 705,000 and 812,000 jobs.
- As the total number of jobs grew, so did compensation: from \$37.7 billion in 1980 to \$68.1 billion in 1989. In fact over the total period 1980-89, \$521.23 billion in worker, employee, and farm proprietor incomes was generated and excluding income from interest, dividends, transfer payments, and rents. Of this total \$178.7 billion, or 34%, came from direct sources, mostly in the nonmanufacturing sectors, while the remainder came from the expenditure-induced effects, which are spread out across the economy.
- Furthermore, while manufacturing accounted for \$17.6 billion of average compensation over the 1980-89 period, other sectors also participated, with direct and indirect agricultural compensation at an average \$1.3 billion per year.

The State & Local Tax Contribution

While the Federal government was the first to start taxing tobacco directly, beginning in 1863, State and Local governments have built up a greater dependency on this revenue source over the past century, both in terms of total excise tax dollars collected as well as in terms of the share of total dollars collected from tobacco business activity that is represented by these excise tax collections.

There is some historic irony in this fact, given that earlier this century some 14 States actually banned the sale of cigarettes, and 1 banned the sale of snuff. In fact, tobacco's active participation in the prohibition era only ended in 1927 when Kansas repealed its sales ban. But the States wised up pretty fast adopting the principle that "if you can't beat 'em join 'em." The classic case was Iowa which in 1921 simultaneously repealed its ban and enacted its excise tax. When North Carolina finally joined the trend in 1970, all 50 States acknowledged cigarettes to be a stable money-maker, and so they do today. And given the financial stress imposed on the States by the Federal transfer of social programs that characterized the Reagan era, it is no wonder that as many as 9 States increased their cigarette tax rates this year, and the District of Columbia more than doubled its rate.

1991 MONTHLY CIGARETTE TAX RATE CHANGE

MONTH	STATE	RATE CHANGE (cents/20)	FROM	TO	APPROVED	EFFECTIVE
JAN		NO APPROVALS				
FEB		NO APPROVALS				
MAR	UT	3.5 cents	23	26.5	3/19/91	7/1/91
APR	AR	1 cent	21	22	4/10/91	7/1/91
APR	ND	- 1 cent	30	29	4/18/91	7/1/91
MAY	VT	3 cents (3 steps)	17	18	5/18/91	7/1/91
MAY	DC	13 cents	17	30	5/24/91	7/1/91
MAY	MD	3 cents	13	16	5/24/91	6/1/91
MAY	IA	5 cents	31	36	5/31/91	7/1/91
JUN	MN	5 cents	38	43	6/1/91	6/1/91
JUL	NC	3 cents	2	5	7/17/91	8/1/91
AUG	PA	13 cents	18	31	8/5/91	8/19/91
AUG	CT	5 cents	40	45	8/22/91	10/1/91
SEP		NO APPROVALS				
OCT		NO APPROVALS				

Few people today recall the Progressive Era's "Anti-Cigarette League of America" and the ban on smoking in office buildings in New York City and other major social centers where smokers were routinely arrested and fined \$50 for smoking at their desks all out of alleged concern for "public safety." Fewer still recall the "National Tobacco League of America" and the "Smokers League Against Tobacco Prohibition," the nation's first smokers' rights groups, which argued in 1915 that tobacco consumers should not assume the passive role adopted by alcohol consumers letting the industry alone defend their rights. Both groups appealed to "personal privileges" and the personal freedoms of Americans -- what some would call today the right to personal choice.

The conflict between the need for State and Local tobacco tax revenues and the desire of some groups to curtail consumption has, over the past decade, led to calls for increased tobacco taxation for the specific purpose of earmarking such revenues for health-related programs, including recent calls by certain Congressmen and Minnesota Gov. Carlson (R) to help solve the health care cost spiral and the problem of inadequate coverage by hiking tobacco taxes to subsidize health insurance. 3/ Nevertheless, like the Federal government the States by and large allocate their revenues to their general funds.

What is often forgotten, however, in the excise tax debates is the business of tobacco and the tax contributions that this business generates. All States rely on tobacco's economic contribution, often because of the sizable expenditure-induced effects, and because the wholesale-retail sectors tend to be fairly labor-intensive. Thus, there is a tobacco industry in Arizona, Oregon, and Minnesota, and other States that are not normally considered tobacco States. In fact, tobacco is big business in States such as New York and California that have a large number of consumers. 4/

Thus, according to the WEFA State data:

- Over the period 1981-90, of the \$151.7 billion generated by tobacco business activity at the State and Local level, fully 68.7% came from sources other than excise taxes. The \$47.48 billion contribution from tobacco excise taxes, 31.3% of total, is significantly higher than the 14.7% Federal share we saw earlier, even if the absolute amount was only \$4.8 billion more than the \$42.7 billion Federal take. Thus, any reduction in consumption caused by higher excise taxes runs the risk of reducing business activity by an amount greater than the increase in excise tax collections even given the relatively inelastic nature of consumption, especially for cigarettes. Nevertheless, given the higher excise share, this risk is less at the State level than it is at the Federal level.
- The risk at the State level is, however, complicated by the fact that the States, unlike the Federal government, are faced with bootlegging effects, where consumers in higher tax States have the opportunity to purchase tobacco products in neighboring lower tax States, much like the Canadians are demonstrating with the dramatic increase in cross-border sales: as excise taxes have pushed the per pack price in Canada above \$6, Canadian exports to the US in 1991 are thus far up 300% to 2 billion units; what had been a \$16 million business is now a \$50 million business, an amount that will likely rise to over \$100 million on an annual basis, not counting the increase in the border duty-free market.
- To give you some idea of the magnitude of the employment and income effects at the State level, especially for a State that is not considered a tobacco State, let's look at Minnesota, where the gains in employment from 1972-89 are rather impressive: from 33,000 jobs to over 100,000.
- Likewise for compensation in Pennsylvania, the gains have also been impressive: from over \$1 billion in 1972 to \$3.4 billion in 1989, on an undeflated basis.

Just as declining domestic cigarette consumption is likely to lead to reduced Federal excise tax collections, so will such declines entail lost tax collections at the State and Local levels and increased pressure to increase tax rates. However, a number of TMA studies for individual States have concluded that increasing State excise taxes could lead to greater losses in business activity, and business-related tax collections, depending on the degree of bootlegging activity that one assumes, assumptions that are related to disparities in tax rates between neighboring States.

As a rule, the following appears to be true for most States:

1. The largest State and Local tax contribution made by the tobacco industry, for the vast majority of those States having income taxes, is in the form of the personal income tax, a sum that is lost to the State to the degree that tobacco business activity is curtailed. In some cases, proposals to hike excise taxes will cost the given State more in income and sales taxes lost than the State would gain from the higher excise tax. Generally, the individual State will lose more in personal income than it will gain in excise tax revenue;
2. In all States, proposals to hike excise taxes will cost the State employment, often the kind of jobs that are hard to replace. Increased State unemployment also runs the risk of costing the State more in transfer payments to support the unemployed;
3. Because of the large expenditure-induced effects, hiking tobacco excise taxes tends to impact most those sectors that are NOT thought of as part of the "tobacco industry." From clothing stores to construction, lost incomes mean lost jobs in sectors that have nothing directly to do with the tobacco industry. If the would-be tax-hikers wish to attack the tobacco industry, they often end up negatively impacting other economic sectors, across all political constituencies in the state State and in all legislative districts.

US Tobacco To The Year 2,000

Due to the increasing competitiveness of US tobacco leaf and tobacco products, and the growing appreciation for the American Blend cigarette in foreign markets, it is likely that increased amounts of US leaf will be consumed the world over both in the form of unmanufactured leaf exports and in the form of US export cigarettes. For the first time since 1981, US cigarette production in 1990 topped 700 billion units, coming in at nearly 710 billion pieces, more than the 704 billion produced in 1979, even as the decline in domestic cigarette consumption escalated. The increase in cigarette exports is more than compensating for this decline, a shift that is likely to continue in 1991.

Though 1991 will still fall short of the record 1981 year, when the US manufactured 736.5 billion units, we will be closing in as 30 billion additional export units will more than compensate for an estimated decline of some 20 billion in domestic consumption, yielding total output in excess of 720 billion pieces.

- As we become an increasingly export driven industry, one that is now throwing off more than 1 in 4 sticks for export, our dependence on open foreign markets becomes even more important at all levels of the industry.

- We estimate that the now open markets of Japan, Taiwan, and Korea have yielded US tobacco farmers an additional \$288 million, at the auction floor, than would have been the case had these markets not fallen to US pressure for fair trade relations.

- But competition in foreign cigarette markets is stiff, and will likely become tougher, as the monopoly countries begin to take a more active interest in penetrating third country markets. Surprisingly, even with the rapid growth in US cigarette exports, we have only now returned to export market shares that we enjoyed more than 10 years ago.

With this increasing reliance on exports, comes improved economic effects for the US economy that are directly related to the more than \$6 billion in trade surplus that we will see for 1991. In fact, based on 1990 data, one study estimates that the direct economic effects alone from these leaf and product exports account for nearly 116,000 jobs, yielding compensation of over \$1.7 billion per year, and tax contributions of \$623.5 million. And this does not even count the indirect effects that result from the circulation of these incomes around the US economy. What would the gains be if Chinese consumers, sitting in a market that accounts for one-third of the entire world, were offered the opportunity to consume the world's best?

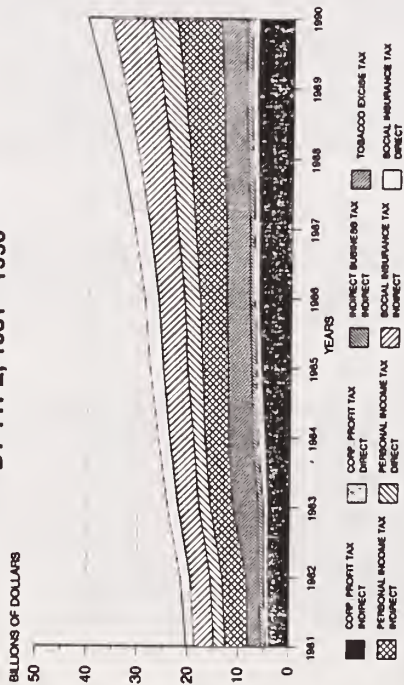
1/ For example, by eliminating spending by all sectors of the tobacco industry on automobiles, there will be a reduction in the demand for steel, which in turn will require less chemicals, iron ore, limestone, and coal as well as reduced demand for upholstery fabrics, natural fibers, synthetic fibers, and plastics and reduced demand for electricity and containers to name a few of the interconnected results.

2/ Calculating the impact of these effects requires use of a simple economic formula, one that relates income earned to income spent. For every dollar of income, employees have two choices: spend it or save it. Since tobacco employees are assumed to be the same as all American employees, at least with regard to their saving vs. consuming decision-making, national figures related to the "propensity to consume" can be used to figure out the flow of dollars around the economy. That is, if American consumers spend 80 cents of every dollar earned, then 20 cents is saved, and 80 cents goes into someone else's pocket. This 80 cents is then available for spending, part of which will actually be spent and part saved. In this way, money moves around the economy generating demand for the goods and services of other industries.

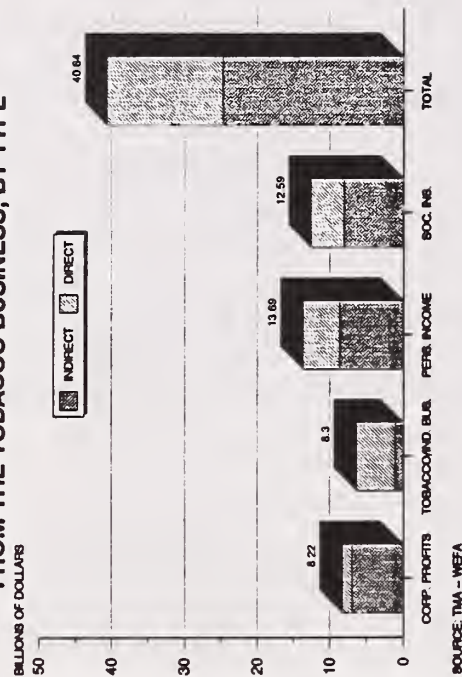
3/ HR 698 and HR 699 by Rep. Stark (D-CA), HR 892 by Jacobs (D-IND), HR 1255 by Rep. Peace (D-OH), HR 3689 by Rep. Johnston (D-FL), and S. 1446 by Sen. Kerry (D-MA).

4/ WEFA reconciles the total national results from its input-output model with data that it compiles into its State models. This method ensures that the sum total of employment due to tobacco activity at the State level equals the sum total of employment shown at the national level. While hundreds of different data sources are used at the State level to track tobacco's economic contribution, WEFA is required to adjust these data sources to match, for example, a calendar year basis (from State fiscal years), and definitional differences between Federal and State data.

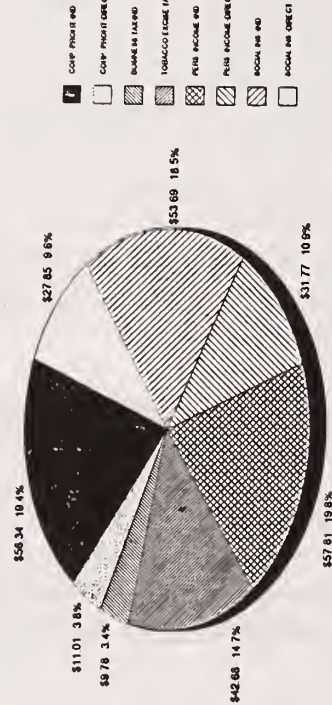
FEDERAL TAX COLLECTIONS FROM THE TOBACCO BUSINESS: BY TYPE, 1981 - 1990



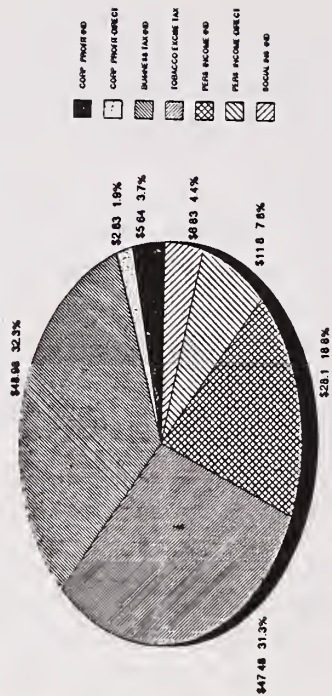
TOTAL FEDERAL 1990 TAX COLLECTIONS FROM THE TOBACCO BUSINESS, BY TYPE



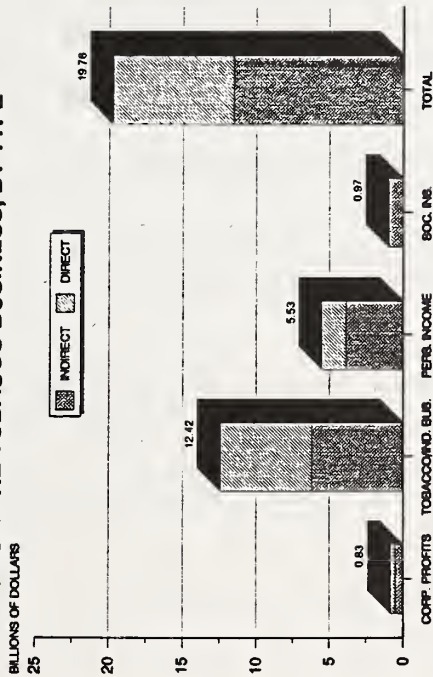
TOTAL FEDERAL TAX COLLECTIONS FROM THE TOBACCO BUSINESS: 1981 - 1990 (\$290.42 BILLION; % IS SHARE OF TOTAL)



TOTAL STATE & LOCAL TAX COLLECTIONS FROM THE TOBACCO BUSINESS: 1981 - 1990 (\$151.68 BILLION; % IS SHARE OF TOTAL)

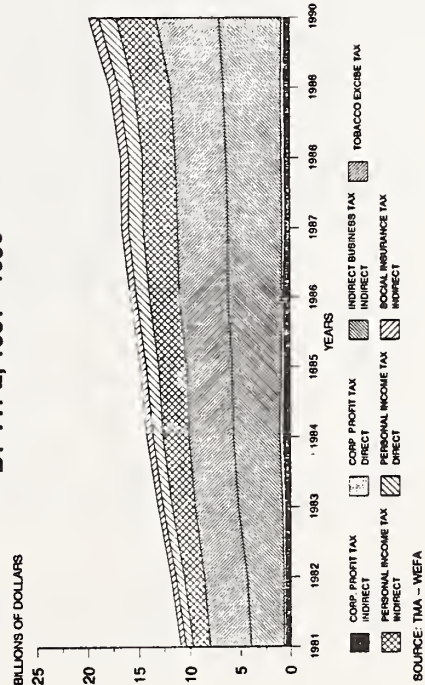


TOTAL STATE & LOCAL 1990 TAX COLLECTIONS FROM THE TOBACCO BUSINESS, BY TYPE



SOURCE: TMA - WEFA

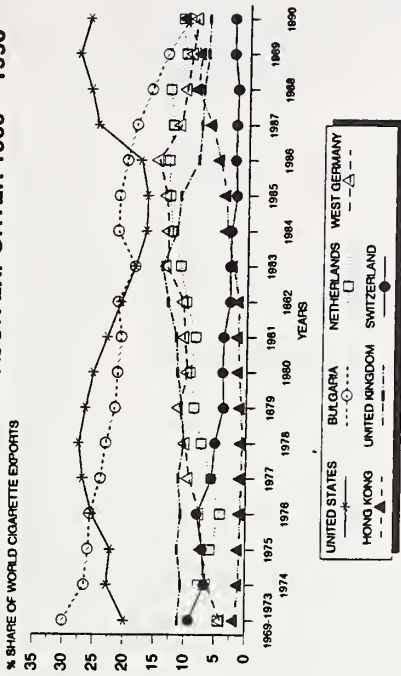
STATE & LOCAL TAX COLLECTIONS FROM THE TOBACCO BUSINESS: BY TYPE, 1981 - 1990



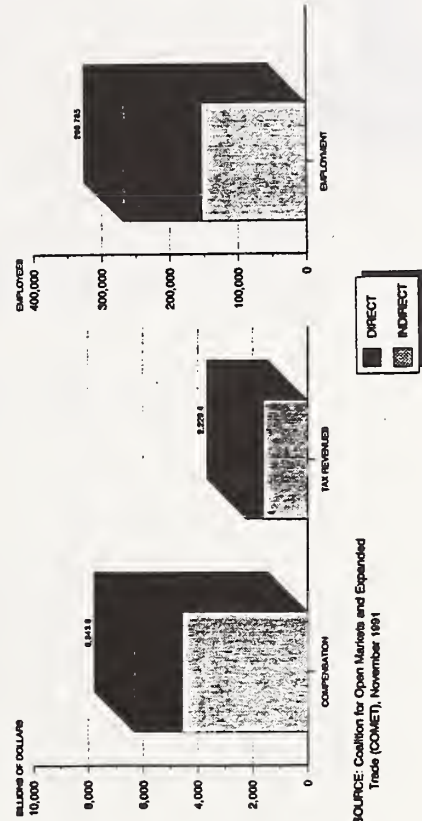
SOURCE: TMA - WEFA

COMPETITION IN THE WORLD CIGARETTE EXPORT MARKET:

PERCENT SHARE BY MAJOR EXPORTER 1969 -- 1990



IMPACT OF TOBACCO & TOBACCO PRODUCTS EXPORTS ON THE U.S. ECONOMY 1990



SOURCE: Coalition for Open Markets and Expanded Trade (COMET), November 1991

		FEDERAL TAX RECEIPTS													
		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1981-90	AVERAGE	SUM 81-90 AS % OF TOT TNS
		(BILLIONS OF DOLLARS)													
CORP. PROFITS TAX	TXCF HISTORY	70.32	65.70	49.05	61.35	75.25	76.27	83.82	103.20	110.52	110.43	108.50	844.09	84.409	3.8
	TXCF C & S	0.80	0.90	1.00	1.60	1.00	0.89	1.10	1.17	1.26	1.29	11.01	1.101	19.4	
	TXCF E - I	3.39	3.80	4.20	4.20	4.90	5.79	6.30	6.30	6.76	7.16	6.95	56.34	5.634	
INDIRECT BUS. TAX	TXIF HISTORY	38.82	56.18	48.07	51.63	55.72	55.10	50.47	53.97	56.97	58.40	61.68	548.19	54.819	14.7
	TXIF C & S	2.50	2.61	2.50	5.00	4.69	4.60	4.59	4.59	4.55	4.35	5.20	42.68	4.268	3.4
	TXIF E - I	0.63	0.87	0.84	0.96	0.99	0.98	1.03	0.96	1.02	1.03	1.10	9.78	0.978	
PERSONAL INCOME TAX	TXPF HISTORY	257.90	304.45	294.42	310.30	346.45	361.45	405.83	415.10	463.95	492.80	3493.65	349.365	10.9	
	TXPF C & S	1.90	2.30	2.40	2.29	2.40	2.99	3.42	3.68	4.33	5.06	31.77	3.177	19.8	
	TXPF E - I	3.83	4.37	4.69	4.41	4.57	5.09	5.23	6.20	6.64	7.78	8.63	57.61	5.761	
SOCIAL INSURANCE TAX	TXSF HISTORY	186.75	218.75	233.70	262.50	284.67	310.90	332.12	350.85	389.85	420.07	446.70	324.011	9.6	
	TXSF C & S	1.38	1.67	1.87	2.00	2.25	2.61	2.71	2.92	3.42	3.87	4.53	27.85	2.785	18.5
	TXSF E - I	3.28	3.79	4.03	4.13	4.58	4.75	5.16	5.52	6.42	7.25	8.06	53.69	5.369	
TOTAL TAX RPTCS., FEDERAL	TXF HISTORY	553.82	639.52	635.30	669.90	726.00	788.65	827.87	913.80	972.43	1052.85	1109.70	8326.02	832.602	38.9
	TXF C & S	6.60	7.37	7.69	10.30	11.00	11.04	11.10	11.99	12.82	13.81	15.92	113.04	11.304	61.1
	TXF E - I	11.15	12.83	13.76	13.69	15.04	16.61	17.72	18.97	20.83	23.21	24.72	177.38	17.738	
STATE & LOCAL TAX RECEIPTS															
		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1981-90	AVERAGE	SUM 81-90 AS % OF TOT TNS
		(BILLIONS OF DOLLARS)													
CORP. PROFITS TAX	TXON HISTORY	14.48	15.45	14.02	15.90	18.67	20.15	22.47	23.72	25.67	24.65	23.63	204.33	20.433	1.9
	TXON C & S	0.21	0.20	0.19	0.30	0.39	0.30	0.19	0.30	0.32	0.34	0.30	2.83	0.283	3.7
	TXON E - I	0.50	0.50	0.50	0.50	0.70	0.60	0.70	0.50	0.55	0.56	0.53	5.64	0.564	
INDIRECT BUS. TAX	TXIN HISTORY	174.48	195.30	210.75	220.95	258.20	278.53	298.45	313.80	331.67	355.58	378.57	2851.80	285.180	31.3
	TXIN C & S	3.90	4.00	4.20	4.30	4.40	4.50	4.80	4.90	4.97	5.18	6.23	47.48	4.748	32.3
	TXIN E - I	3.10	3.30	3.70	4.40	4.60	4.90	5.30	5.40	5.49	5.70	6.19	48.98	4.898	
PERSONAL INCOME TAX	TXPN HISTORY	82.63	94.45	104.88	116.05	129.85	140.20	151.45	165.83	176.48	194.77	206.60	1480.56	148.056	7.8
	TXPN C & S	0.61	0.70	0.81	0.90	1.00	1.20	1.30	1.41	1.34	1.48	1.66	11.80	1.180	18.5
	TXPN E - I	1.39	1.70	2.00	2.20	2.50	2.70	2.90	3.40	3.23	3.60	3.87	28.10	2.810	
SOCIAL INSURANCE TAX	TXSN HISTORY	29.75	32.50	35.85	38.50	40.18	43.22	47.05	49.30	52.70	56.65	60.25	456.20	45.620	0.0
	TXSN C & S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.4
	TXSN E - I	0.40	0.50	0.50	0.50	0.61	0.59	0.60	0.70	0.78	0.88	0.97	6.63	0.663	
TOTAL TAX RPTCS., S & L	TXN HISTORY	390.00	425.55	449.37	487.65	540.45	581.80	626.28	655.18	697.62	749.90	800.47	6014.27	601.427	41.1
	TXN C & S	4.70	4.85	5.22	5.52	5.82	6.02	6.38	6.55	6.68	7.04	8.21	62.29	6.229	58.9
	TXN E - I	5.40	6.00	6.70	7.60	8.41	8.81	9.50	10.00	10.06	10.76	11.55	89.39	8.939	



Outlook '92

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FARM INCOME OUTLOOK: FOLLOWING 1990's RECORDS

Robert G. McElroy
Agricultural Economist, ERS

The latter part of the 1980's saw U.S. agriculture improving each year as the recovery from the earlier farm financial crisis continued. Cash receipts increased some \$10 billion per year, while Government programs became more market oriented and contributed less to gross cash income. Even with expenses rising some \$4 to \$6 billion per year, net cash incomes rose an average \$2 billion annually. Crop and livestock receipts reached record levels in 1990, and both net cash income of \$61.8 billion and net farm income of \$50.8 billion were a new high.

For 1991 and 1992, net incomes are forecast to fall somewhat. However, even after the record levels of 1990, the lower incomes are still well within a relatively high historic range. Crop sector receipts are leveling out but declines in red meat and, especially, dairy receipts are affecting the livestock sector. Production expenses continue to increase, with manufactured inputs, repairs, and hired labor costs rising the fastest. These three components are among those most important in level of use.

Cash grain production is forecast to increase some 10 to 12 percent next year after falling 9 percent in 1991. Wheat production fell nearly 28 percent in 1991 and corn was down 5 percent. The other major grains increased. Wheat should recover in 1992 and production of other cash grains (excepting soybeans) should also increase.

Calendar-year prices were also down in 1991 for most cash grain crops, with rice a notable exception. For 1992, wheat prices are forecast up slightly, with some decrease for the other grains.

Cotton production is forecast down slightly next year after increasing nearly 18 percent this year. Any lower prices associated with this year's higher production were offset by the larger crop.

Fruit and vegetable production is forecast up for 1992. Fruit prices are currently high, reflecting last December's freeze in California. Vegetable prices are forecast up slightly for 1992.

On the livestock side, forecast increases in beef and pork production next year will probably be more than offset by lower prices. The low milk prices which have dominated livestock receipts over the past year are strengthening and should amount to a modest 2-percent or so increase in 1992 dairy receipts.

1992 Receipts Favoring Crops Over Livestock

Total cash receipts reached a record \$170 billion in 1990--\$80.4 billion from crops and \$89.6 billion from livestock. This year and next, however, receipts are forecast to fall 1 percent, due primarily to declines in the red meat and dairy subsectors. Crop receipts are expected to continue rising for 1991 and hold steady next year.

Wheat receipts fell in 1990 and 1991 as record 1990 world production led to prices falling about \$1 per bushel that year and into 1991. This past August prices began rising due partly to lower 1991 production and stronger domestic use and exports. For 1992, the wheat ARP has been lowered from this year's 15 percent to 5 percent. This should raise production and, with prices forecast steady to rising slightly, wheat receipts are being forecast up 11 percent. However, this is still below 1988-90 average levels.

Corn is the largest single U.S. crop in terms of receipts. A preliminary 5-percent ARP has been announced for 1992 feed grains, the lowest in 11 years. This should lead to higher production, but lower forecast average prices may lead to a slight decrease in corn receipts. Given its importance to the agricultural sector, corn production has had major impacts on historical swings in farm incomes. The ARP is one of the most important policy factors influencing planted acreage, so if prices manage to improve over current forecasts, this lowering of the rate could carry over into improved crop receipts and, therefore, farm incomes.

Other crop subsectors are holding steady or indicating slight receipt reductions. The notable exception is fruits and nuts, a commodity group representing many products. Last winter's freeze in California severely reduced fresh market supplies of oranges, causing prices to jump this past summer to two-and-a-half times their normal level. This price increase has been slow to come down and is forecast to hold for several months into 1992. The result should be higher-than-normal orange prices for this fall's crop, particularly the Florida harvest, as well as higher prices in early 1992 when California production begins entering the market. The 1992 forecast for fruit and nut receipts is \$11 to \$13 billion, rivaling corn.

Livestock receipts, including red meats and dairy, were record high in 1990. However, in 1991 and 1992, the red meat components are likely to experience falling receipts. Cattle and calves are forecast off 1 to 2 percent next year. With hog production forecast at a record high, prices are expected to fall from a 1991 average just under \$50 to a 1992 level in the low- to mid-\$40's, leaving hog receipts down 6 to 8 percent. Dairy product receipts are forecast to improve by some 2 percent in 1992 after a drop of 10 percent this year. Poultry receipts will be steady to declining slightly.

Direct Government Payments Trending Down

Direct payments reached a high of \$16.7 billion in 1987. This year they totaled slightly more than \$8 billion, continuing the decline of the last few years. However, for 1992, direct payments are forecast at \$9 to \$10 billion, up 10 to 13 percent from 1991. Most of the increase is coming from cotton deficiency payments which are expected to increase by some \$500 million. Food grain payments are also forecast up, although by a much smaller amount. Conservation program payments are forecast to rise from 1991's level of slightly less than \$2 billion to just over \$2 billion. Not included in these 1991 and 1992 forecasts are any disaster payments that may occur. These payments have been discussed but not approved.

Production Expenses Still Climbing

Farmers' and ranchers' 1992 production expenses are forecast to increase 1 to 3 percent. Feed accounts for the largest single cash expense. Corn and soybean meal prices are forecast to fall by less than 1 percent while prices for the other feeds are forecast down as much as 3 percent. The number of cattle placed on feed during this past summer was off 16 percent from a year earlier and was the lowest level of net placements since 1981. Fall quarter intentions are also forecast off from last year. Fewer cattle placed on feed suggests that many heavy weight yearling cattle remain outside feedlots. When and if they enter the feedlots next year at these heavy weights, they will be ready for market in less time than usual, reducing feed demand. With the number of cattle on feed up only 1 percent next year and hog inventories constant, 1992 feed expenses (price times quantity) are forecast up, but by less than 1 percent.

Feeder livestock account for the second largest expense. Feeder cattle prices are forecast down 4 to 6 percent next year and feeder pig prices down 12 to 14 percent. These price reductions will likely reduce total 1992 feeder livestock expenses by under \$500 million.

Seed is another component of farm-origin inputs, but accounts for only 3 percent of the total expenses. Seed expenses are forecast to rise by 3 to 5 percent in 1992, due mainly to increased planted acreage and higher prices for hybrid corn and grain sorghum.

The manufactured inputs--fertilizer, fuels, electricity, and pesticides--each account for some 4 to 6 percent of total expenses. Forecast increases in 1992 acreage of the major crops are expected to raise demand for these production inputs. Prices for each are also forecast to be higher next year, which with increased use will result in higher expenses. Expense increases will range from 1 to 3 percent for fertilizers and pesticides to 4 to 6 percent for fuels and electricity. Total 1992 manufactured input expenses are forecast to rise nearly \$1 billion.

Interest costs played a major part in the financial crisis of the early 1980's. Since that time, through debt reduction and fiscal conservatism on the part of producers and their lenders, interest expenses have fallen,

particularly for real estate. Total interest expenses (including operator dwellings) reached a high of \$21.8 billion in 1982, then fell each year through 1990. For this year and next, they are forecast to fall 1 to 2 percent.

Operating expenses--repairs, labor, custom work, transportation, etc.--are forecast to rise 3 to 7 percent. Due about equally to higher wage rates and increased demand from more crop acreage, labor expenses--the third highest cash expense component--could rise by nearly \$1 billion, or 7 percent, in 1992. Repair costs, while only half the dollar amount of labor, are forecast up 5 percent.

Net farm income reflects both cash and non-cash components of income and expenses. Non-cash expenses have been rising for several years and are forecast to increase another 2 to 3 percent, or \$500 million, in 1992. Essentially all of this is due to higher capital consumption expenses, although non-cash perquisites to hired labor could rise marginally.

Net Incomes Easing

Nominal net cash and net farm incomes for 1991 and 1992, after rising each year from the mid-1980's through 1990, are forecast to return to their 1988-89 levels. Lower livestock receipts, lower Government payments (in 1991), and continued expense increases will combine to leave net cash income at \$58 billion in 1991 and \$52 to \$57 billion in 1992. Net farm income is forecast at \$44 billion in 1991 and \$40 to \$46 billion in 1992.

Although these forecasts reverse the direction nominal incomes have taken lately, they are still at levels exceeding all but those of just 2 or 3 years ago. When general inflation is considered, real cash incomes have eased downward for the past 4 years. However, when viewed over the longer term, real cash incomes are still above those of the early 1980's and on the same long-run trend since the 1950's.

Cash Grain Farm Income Higher

While overall net cash incomes are forecast down 4 percent for crop farms and 6 percent for livestock farms, some farm types are expected to experience a slight increase. Cash grain farms (those with over 50 percent of the value of production coming from one or more of the cash grains) could see 1992 net cash incomes increase about 1 percent on average, led by wheat receipts. Since most cash grain farms are in the Midwest, this region should outperform the other major areas in terms of crop receipts. Many cash grain farms also produce livestock, usually hogs. With hog receipts forecast down 6 to 8 percent, the Midwest should see livestock receipts off some 8 percent, which will probably outweigh any crop increases, leaving total receipts about 1 percent lower. With cash expenses rising across all farm types and in all regions, Midwest net cash incomes are forecast down just under 6 percent.

Incomes for other major farm types are forecast to decline in 1992, with the exception of dairy farms where a very slight increase could occur. Net

incomes are also expected to decline in other major regions. The decrease will range from 4 to 5 percent in the Northeast, Southeast, and West, but will fall by less than 1 percent in the Southcentral where cotton predominates and wheat and rice are also important.

Reliability of Financial Forecasts

USDA's short-run farm income forecasts are based on an accounting model and are updated quarterly. The forecasts in this paper reflect conditions that were expected as of mid-November. The forecasts are based on final U.S. estimates (currently 1990) which are moved by quarterly prices and quantities forecast by USDA commodity analysts. These price and quantity forecasts are the same as those being presented in the many commodity sessions at this conference. The resulting financial forecasts are revised each succeeding quarter until the final estimate is made approximately 18 months (6 quarters) after the first forecast.

An error analysis over the past 8 years compared the Outlook Conference forecasts and subsequent revisions over 6 quarters to the final estimates to determine the proportional differences by income component. Bottom-line net cash income was underestimated an average of 16 percent annually, ranging from \$2.1 billion to \$13.7 billion. Net farm income was off an average of 14 percent, being underestimated 6 out of the 8 years. The major causes were a 24-percent error in forecasting direct payments, a 34-percent error in farm related income, and a 115-percent error in the value of the change in inventories (used in forecasting net farm income, only). Receipt and expense forecasts were much more reliable with errors of only 4 to 5 percent, being overestimated as often as underestimated. After 4 quarters, the forecasts of net cash income should improve to within 6 percent of the final estimate.

Nominal Improvement Indicated in the Longer Run

In the longer run there are indications of some recovery from the lower incomes forecast for 1991 and 1992. No one should expect these forecasts to predict conditions in a particular year. Who could have accurately anticipated this year's drought in the Midwest? However, trends are evidenced and can be forecast for a few coming years.

Through the mid-1990's and the rest of the current farm legislation, financial economists are expecting improvement in the major farm income indicators in nominal terms. The econometric equations underlying the forecasts tend to smooth year-to-year variations, particularly for livestock where cycles exist but exact timing is unknown. Crop and livestock receipts are moving up slightly. Commodities showing the greatest improvement are wheat, cattle and calves, soybeans, and poultry. The only declining indicator is Government payments. Total cash expenses likely will continue increasing slightly, led by hired labor expenses. Interest expenses, however, could fall gradually.

Given the overall general increases expected for receipts and slight gains in expenses, nominal net cash incomes would rise moderately. Net farm incomes, on the other hand, including non-cash components of income and expenses, could

rise a little faster. When general inflation (as measured by the GNP price deflator) is factored in, real net cash and net farm incomes are still rising, but only slightly.

Farm income statements

Item	1987	1988	1989	1990P	1991F	1992F
Billion dollars						
Cash income statement:						
1. Cash receipts	141.8	151.1	160.9	170.0	168	163 to 171
Crops 1/	65.8	71.6	76.8	80.4	83	80 to 85
Livestock	76.0	79.4	84.1	89.6	85	82 to 87
2. Direct Government payments	16.7	14.5	10.9	9.3	9	8 to 11
Cash Government payments	6.6	7.1	9.1	8.4	8	8 to 10
Value of PIK commodities	10.1	7.4	1.7	.9	1	0 to 1
3. Farm-related income 2/	6.6	6.3	8.1	6.7	7	6 to 8
4. Gross cash income (1+2+3)	165.0	171.9	179.9	186.0	183	179 to 188
5. Cash expenses 3/,4/	109.8	114.5	120.5	124.2	126	125 to 132
6. Net Cash Income (4-5)	55.3	57.4	59.4	61.8	58	52 to 57
Deflated (1982\$) 5/	47.8	47.3	47.0	47.0	42	36 to 42
Farm income statement:						
7. Gross cash income (1+2+3)	165.0	171.9	179.9	186.0	183	179 to 188
8. Nonmoney income 6/	5.6	6.1	6.1	6.3	6	5 to 7
9. Inventory adjustment	-2.3	-3.5	4.3	2.9	1	1 to 6
10. Total gross income (7+8+9)	168.4	174.5	190.3	195.1	190	189 to 197
11. Total expenses	128.7	133.9	140.2	144.3	146	146 to 154
12. Net farm income (10-11)	39.7	40.6	50.1	50.8	44	40 to 46
Deflated (1982\$) 5/	33.8	33.5	39.6	38.7	32	28 to 34

F = forecast; P = preliminary. Numbers may not add due to rounding.

1/ Includes CCC loans. 2/ Income from custom work, machine hire, recreational activities, forest product sales, and other farm sources. 3/ Excludes depreciation and perquisites to hired labor. 4/ Excludes farm households. 5/ Deflated by the GNP implicit price deflator. 6/ Value of home consumption of farm products and imputed rental value of operator dwelling.

Farm commodity cash receipts					
Items	1987	1988	1989	1990P	1991F 1992F
Billion dollars					
Crop receipts	5.8	7.5	8.2	7.9	7 6 to 8
Food grains	5.0	6.4	7.3	6.8	6 5 to 7
Wheat	.7	1.1	.9	1.1	1 1 to 2
Rice					
Feed crops	14.6	14.3	17.1	19.1	19 17 to 21
Corn	9.9	8.9	11.4	13.7	14 13 to 16
Barley, oats, & sorghum	2.1	2.2	2.3	2.0	2 1 to 3
Oil crops	11.3	13.5	11.9	12.4	12 11 to 14
Soybeans	10.0	12.1	10.5	10.9	11 10 to 12
Peanuts	1.0	1.1	1.1	1.3	1 1 to 2
Cotton (lint & seed)	4.2	4.5	5.0	5.2	5 4 to 6
Tobacco	1.8	2.1	2.4	2.7	3 2 to 4
Fruits and nuts	8.1	9.2	9.3	9.3	12 10 to 13
Vegetables	9.9	9.8	11.5	11.5	12 10 to 13
Greenhouse & nursery	6.8	7.1	7.6	8.1	9 8 to 9
Total crops	65.8	71.6	76.8	80.4	83 80 to 85
Livestock receipts					
Red meats	44.5	46.5	46.9	51.7	50 44 to 53
Cattle & calves	33.6	36.8	36.9	39.7	38 35 to 40
Hogs	10.3	9.2	9.5	11.5	11 9 to 12
Sheep and lambs	.6	.5	.5	.4	* 0 to 1
Poultry and eggs	11.5	12.9	15.4	15.3	-15 14 to 16
Broilers	6.2	7.4	8.8	8.4	8 7 to 9
Turkeys	1.7	2.0	2.2	2.4	2 2 to 3
Eggs	3.2	3.1	3.9	4.0	4 3 to 4
All dairy	17.7	17.6	19.4	20.2	18 17 to 20
Total livestock	76.0	79.4	84.1	89.6	85 82 to 87
Total receipts	141.8	151.1	160.9	170.0	168 163 to 171

F = forecast; P = preliminary; * = less than \$500 million. Numbers may not add due to rounding.

Farm production expenses					
Items	1987	1988	1989	1990P	1991F 1992F
Billion dollars					
Farm-origin inputs	32.6	36.5	37.7	39.0	38 36 to 41
Feed	17.5	20.4	21.0	20.7	20 18 to 22
Livestock	11.8	12.8	13.1	14.7	14 12 to 15
Seed	3.3	3.4	3.6	3.6	4 3 to 5
Manufactured inputs	18.1	18.9	19.7	20.8	21 20 to 23
Fertilizer	6.5	6.9	7.2	7.1	7 6 to 8
Fuels and oils	5.0	5.1	5.0	6.0	6 5 to 7
Electricity	2.2	2.3	2.0	1.9	2 1 to 3
Pesticides	4.5	4.6	5.4	5.7	6 5 to 7
Total interest charges	15.0	14.7	14.7	14.5	14 12 to 15
Short-term interest	6.8	6.8	6.9	6.8	7 6 to 9
Real estate interest	8.2	7.9	7.8	7.7	7 6 to 8
Other operating expenses	34.2	34.4	37.5	38.7	41 40 to 45
Repair and maintenance	6.8	6.8	7.3	7.3	8 7 to 9
Labor expenses	10.0	10.4	11.1	12.5	14 12 to 16
Machine hire & custom	2.1	2.4	2.7	2.6	3 2 to 4
Animal health	1.3	1.3	1.5	1.5	2 1 to 3
Marketing, storage & transportation	4.1	3.5	4.1	4.0	4 3 to 5
Misc. operating expenses	9.7	10.0	10.9	10.7	11 10 to 14
Other overhead expenses	28.9	29.4	30.6	31.3	32 30 to 35
Capital consumption	16.7	17.1	17.6	17.5	18 16 to 20
Taxes	4.9	4.8	5.1	5.6	6 5 to 7
Net rent to non-operator landlords	7.3	7.4	7.9	8.2	- 8 7 to 9
Total production expenses	128.7	133.9	140.2	144.3	146 146 to 154
Noncash and dwell. expenses	19.0	19.4	19.8	20.1	21 19 to 23
Capital consumption	16.7	17.1	17.6	17.5	18 16 to 20
Operator dwelling	1.7	1.8	1.7	2.1	2 1 to 3
Labor perquisites	.5	.5	.5	.5	1 0 to 1
Cash expenses 1/	109.8	114.5	120.5	124.2	126 125 to 132

F = forecast; P = preliminary. Numbers may not add due to rounding.

1/ Total expenses minus noncash and operator dwelling expenses (interest, insurance, repairs, and taxes).

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OUTLOOK FOR PRODUCTION INPUTS

Stan Daberkow and John Schaub

The outlook for farm input consumption and expenditure in 1992 will be shaped by modest price rises for most purchased inputs, an increase in planted acreage, a slight shift in crop mix, and an expected decline in farm income. Whereas farmers spent an estimated \$125 billion for farm inputs in 1991, they are expected to spend 1 to 3 percent more in 1992 (figure 1). Total input costs, which includes non-cash costs such as depreciation, were estimated at \$146 billion in 1991 and are expected to increase 1 to 3 percent next year. In addition to input price rises, the increase in expenditures will be driven by greater corn and wheat acreage which will more than offset an expected decline in soybeans.

Agricultural production inputs cover a variety of products, resources and services used to produce a broad array of food and fiber commodities. This presentation will focus on the situation and outlook for planted acreage, seeds, and the major manufactured agricultural inputs. Information on feed and livestock inputs is being presented in other Outlook sessions. Several trends and issues affecting agricultural input production and consumption in the near and long term are also discussed.

Planted Acreage

Aggregate input use on crops is highly dependent on the mix and level of crop acres planted. Per acre seeding rates, application rates for fertilizers and pesticides, and tillage practices tend to change slowly from year-to-year leaving acres planted the major determinant of aggregate consumption in a given year. However, large increases in input prices, such as those experienced during the energy crises of the 1970's, did result in lower application rates of the energy intensive inputs such as fertilizer.

Planted acreage of the principal row and solid-seeded crops fell

steadily from 1985 through 1988.¹ During 1989 and 1990, planted acreage was 3-5 percent above 1988 levels, while between 1990 and 1991 input intensive row-crop acreage grew 4 percent and the more extensively farmed solid-seeded acres fell 8 percent (figure 2). Even though planted wheat acres fell by 7 million acres from the previous year, planted acreage of the principal crops was still about 328 million acres in 1991.

The level and mix of crops in 1992 is likely to differ from that of 1991 due to lower ARP levels for wheat and feed grains and the flexibility provisions of the farm programs. Row crop acreage is expected to rise next year, with larger corn acres more than offsetting fewer soybeans. Winter wheat acreage will also increase next year since ARP levels were reduced from 15 percent to 5 percent. Consequently, planted acreage may exceed 330 million acres in 1992.

Seed Consumption

In 1991, seed consumption of the eight major field crops was close to 5.9 million tons, down 13 percent from 1984 when 6.8 million were planted (figure 3). For 1992, seed use will increase about 2 percent due to the rebound in winter wheat acreage.

Higher corn, grain sorghum, cotton and soybean seed prices in 1991 were offset by generally lower small grain, forage and seed potato prices. As a result, USDA's prices paid index for seed remained unchanged from 1990 and is likely to remain flat to slightly higher in 1992 (figure 4). Adequate seed supplies, at least relative to the drought year of 1988, along with modest planted acreage increases for next spring and small commodity price movement since last year should keep any seed price index changes minimal.

Fertilizer Consumption

U.S. fertilizer consumption totalled 20.5 million tons for the 1990 fertilizer year, slightly more than the estimated 1991 consumption of about 20 million tons (figure 5). Fertilizer use in 1992 should again be over 20 million tons given the expected upturn in planted acreage.

Over the last 5 years fertilizer prices have been quite volatile with prices declining in 1986 and 1987, increasing in 1988 and 1989, falling in 1990, and up again in 1991 (figure 6). Potash

¹Principal row crops include corn, sorghum, soybeans, flaxseed, peanuts, sunflowers, cotton, dry edible beans, potatoes, sweet potatoes, sugarbeets, tobacco, and sugarcane. Principal solid seeded crops include oats, barley, wheat (durum, other spring wheat and winter), rice, and rye.

prices have been very steady since 1988 and are likely to remain close to current levels as long as the anti-dumping agreement with Canadian producers remains in effect. However, the agreement will expire in 1992. Prices for phosphate and nitrogen products fell significantly in the Spring of 1990 compared to year earlier levels but recovered this year as fertilizer supplies fell relative to demand. Fertilizer prices for 1992 are expected to continue their upward momentum with the prices paid index increasing 4-6 percent. Increasing energy prices and greater corn acreage account for the expected fertilizer price strength.

Pesticide Use

Estimates of pesticide use on the major field crops also tends to follow planted acreage with herbicides accounting for about 80 percent of all active ingredients, insecticides about 15 percent and the fungicides and other products the remainder. Since over 90 percent of all corn, cotton, and soybean acres are treated with pesticides, these crops account for a large share of all pesticide use.

Consumption of pesticides on the 10 major field crops is estimated at 450-500 million pounds of active ingredients (a.i.) with annual variations due to shifts in planted acreage and pest infestations (figure 7).² Pesticide use in 1992 is expected to be near the 480 million pounds estimated for 1991 based on the net effect of increased corn and wheat acres offsetting the declines in soybeans and cotton.

Pesticide prices have risen steadily since 1988, with the largest annual increase (almost 9 percent), occurring between 1990 and 1991 when the input intensive row-crop acreage rose about 6 million acres (figure 8). Prices in 1991 for all the major pesticide products were above 1990 levels. Pesticide prices are expected to continue upward in 1992, in part, reflecting the significant R&D, registration, re-registration, and marketing costs.

Farm Capital Purchases

Tractors and other farm machinery account for about 60 percent of all capital expenditures by farmers; buildings and land improvements another 20-25 percent; and autos and trucks the remaining 15-20 percent. In 1990, farmers purchased nearly \$14 billion worth of capital goods.

Capital goods purchases by farmers, especially tractors and combines, had been in a seven year decline through 1986. Since that time sales of tractors have made a gradual recovery but still have not reached the levels experienced in 1984 (figure 9). Unit

²The 10 major field crops are wheat, barley, oats, rice, corn, cotton, grain sorghum, peanuts, soybeans, and tobacco.

sales of over 40 horsepower tractors were about 67,000 in 1984, 47,000 in 1986 and 66,000 in 1990. Sales for 1991 have slowed considerably throughout the year resulting in unit sales forecast of slightly less than 1990. Combine sales, except for May and June, have also shown weakness during 1991 (figure 10).

Concern about drought conditions in some parts of the country, as well as lower dairy prices, increased production expenses and lowered farm income expectations may have discouraged capital purchases this year. However, some economic factors are encouraging: farm asset values are expected to increase in 1991 and 1992 and interest rates are forecast to decline from current levels. While crop cash receipts, planted acreage, and government payments are expected to increase in 1992, farm income is forecast to be down. The net effect is expected to be flat to slightly increasing tractor unit sales in 1992 relative to 1991.

Petroleum Products

Farm fuel use has trended downward since 1982, although the rate of decline has moderated in recent years (figure 11). While weather and planted acreage can influence year-to-year fuel use, other longer term factors such as reduced tillage systems, larger multi-function machines and the continuing switch from gasoline to diesel engines are also influential. Short-run adjustments in petroleum product use is limited by the fixed nature of the machinery stock in the agricultural sector.

Prices paid by farmers for fuel follow national and international crude oil prices which are often influenced by political as well as economic events. During the Persian Gulf conflict, crude oil prices escalated in the last quarter of 1990 but subsided during the first and second quarters of 1991. Between July and October of 1990, diesel fuel prices increased 65 percent. By April of 1991, diesel prices were back to year earlier levels. Such price movements demonstrate the volatility of the petroleum markets.

DOE is forecasting petroleum price increases in the range of 3-5 percent for next year (figure 12). An increasing share of U.S. oil consumption from imports is expected to drive domestic fuel prices modestly higher in 1992.

Trends and Issues Shaping Agricultural Input Consumption and Production

Farms with over \$250,000 in sales constitute less than 5 percent of all farms, but produce over 55 percent of all cash receipts. At the same time these farms are responsible for nearly 50 percent of all cash expenses. Input distribution, technology adoption, and perhaps, agricultural productivity will be affected by the smaller number, but larger sized farms.

Farm programs will continue to exert an influence on acres planted, commodity prices, and farm income. The 1990 Farm Bill has

increased emphasis on cropping flexibility, which may change input use patterns. The 1990 Farm Bill also continues and expands the environmental aspects of the 1985 act such as the wetlands, CRP and conservation compliance provisions. The CRP and the conservation compliance provisions affect input use either through a reduction of acres planted, by mandating a change in tillage practices to leave additional residue on the soil, or encouraging a shift in crop rotation patterns. The Water Quality Incentive Program and Integrated Farm Management Program Option could also affect input use through their emphasis on reduced chemical usage.

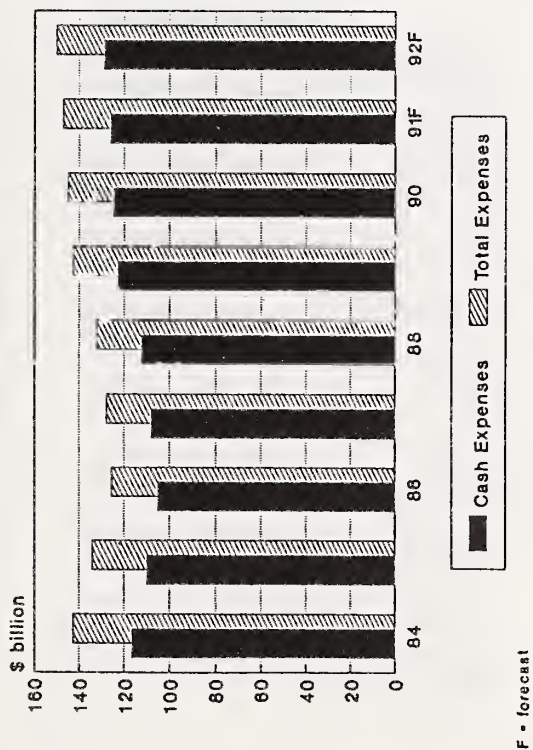
Changes in the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), regarding pesticide testing or retesting for possible health risks, will likely add to the costs of marketing pesticides. Pesticide availability and use especially for specialty crops, may also be affected by pesticide residues on food, farm worker safety, product liability, product re-registration, and groundwater contamination in areas with vulnerable soils. The implementation of the Endangered Species Act may also influence pesticide usage patterns.

Biotechnology research in both the private and public sector promises to transform or replace some conventional inputs. Just as the mechanical, chemical, and computer technologies of the past changed input type, mix and intensity, it is expected that livestock and crop genetic manipulation will do the same in the future. The established seed and chemical industries as well as the newer biotech firms, appear poised to bring a number of new products to the market over the next decade.

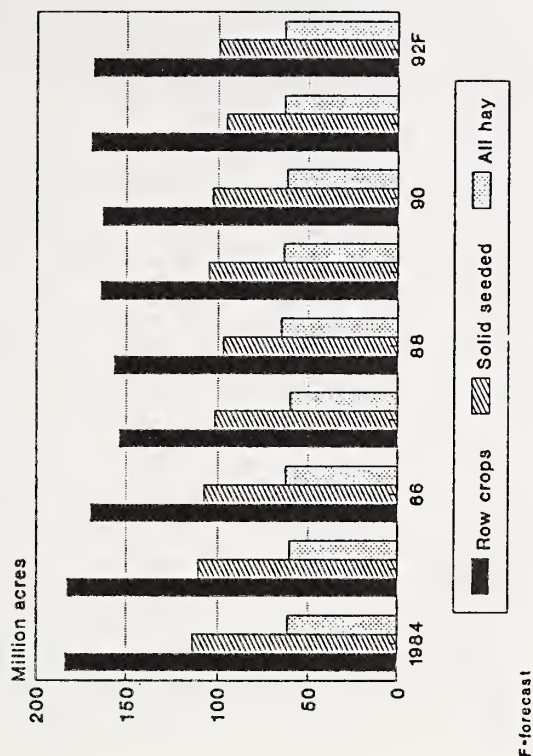
EPA, as well as many states, such as Iowa and Nebraska, continue to examine strategies to deal with ground and surface water contamination from agricultural production practices. The focus of these strategies is on nitrates and pesticides. While still in preliminary stages, the proposals emphasize education and technical assistance but in some geographic areas, land use, input application and cropping sequence regulations will be promulgated if necessary.

Agricultural productivity growth which has increased steadily over the last 20 years will continue to be critical to the economic health of the sector. Productivity increases allow the farm sector to absorb the incessant rise in input/service prices as well as remain competitive internationally. Input substitution and adoption of new technology are keys to continuing growth in productivity.

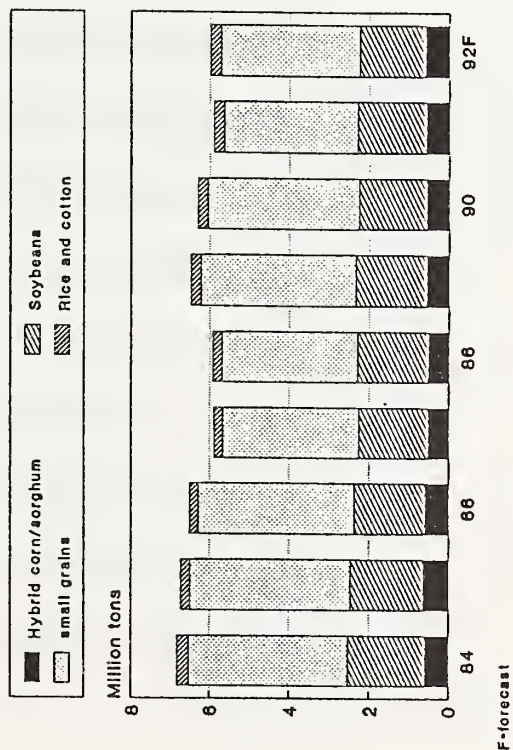
Farm Expenses



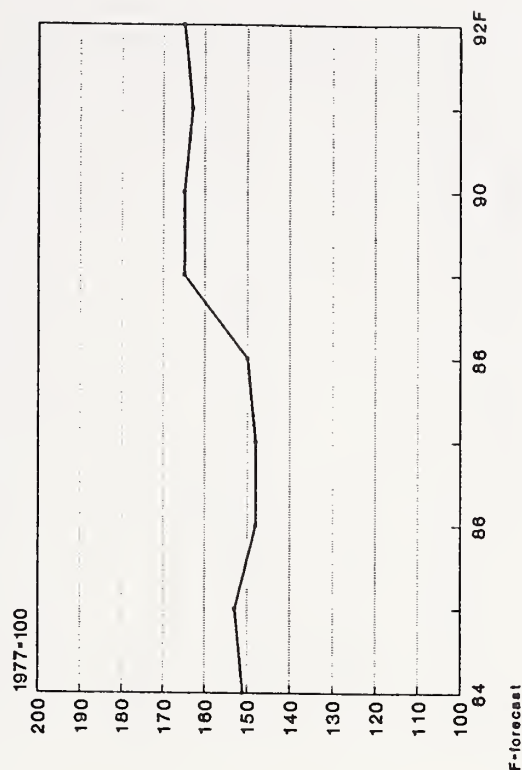
Area Planted to Principal Crops



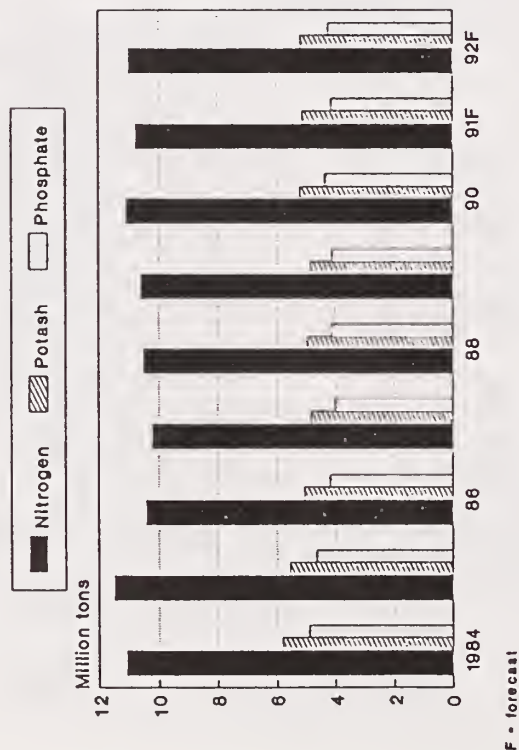
Seed Use for Major Crops



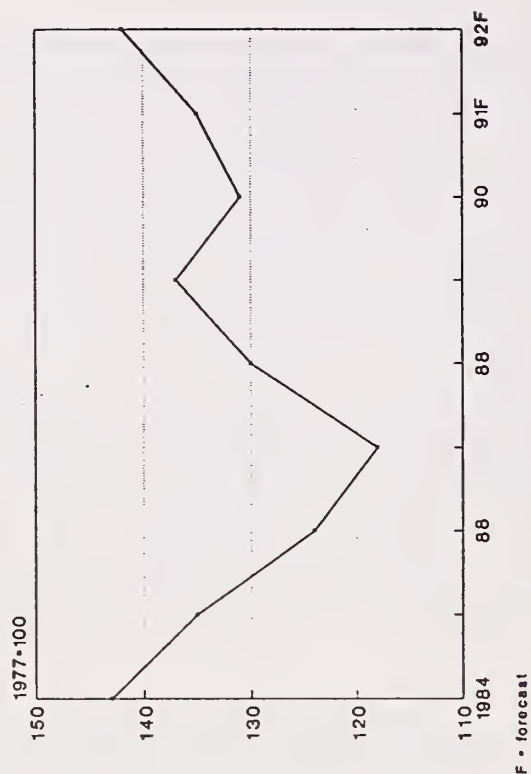
Seed Price Index



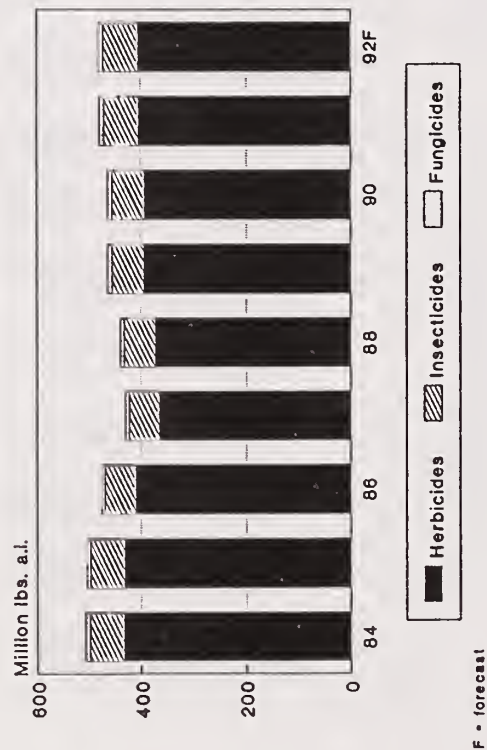
Fertilizer Nutrient Consumption



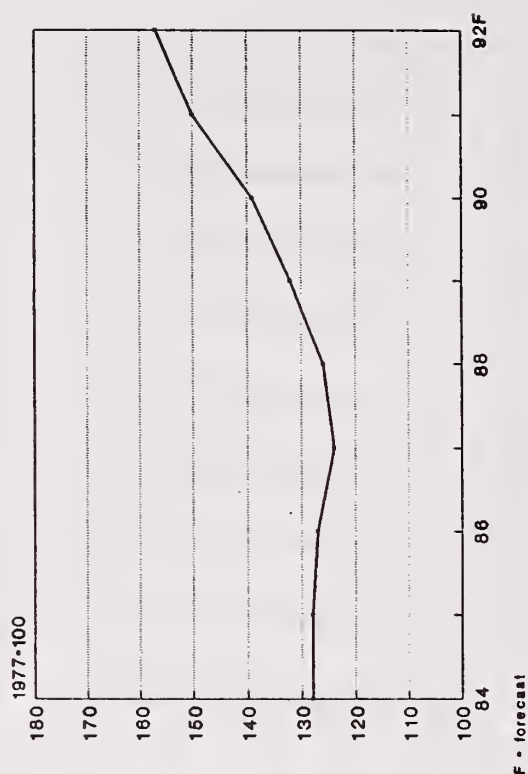
Fertilizer Price Index



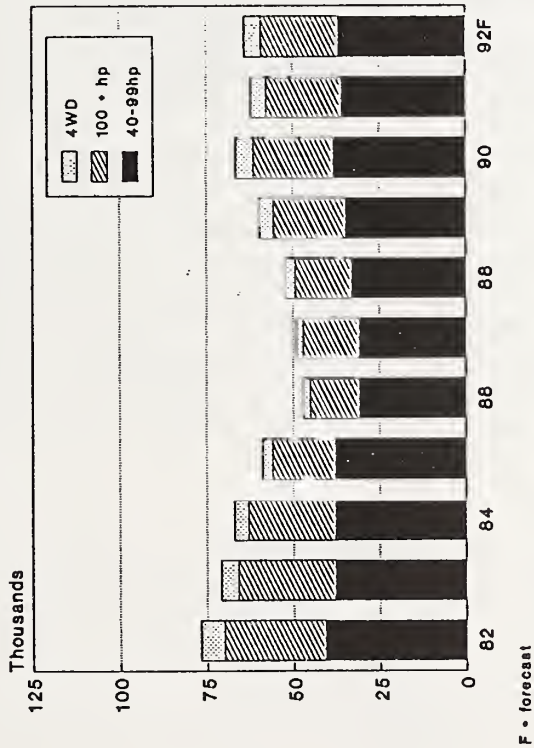
Estimated Pesticide Use on Major Field Crops



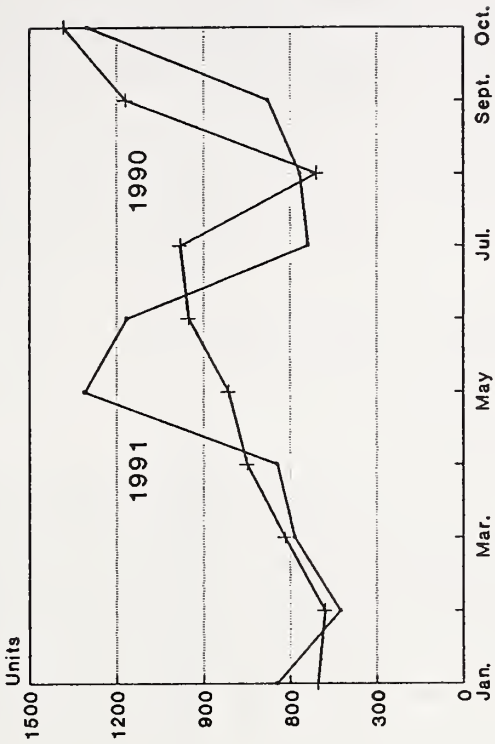
Agricultural Chemical Price Index



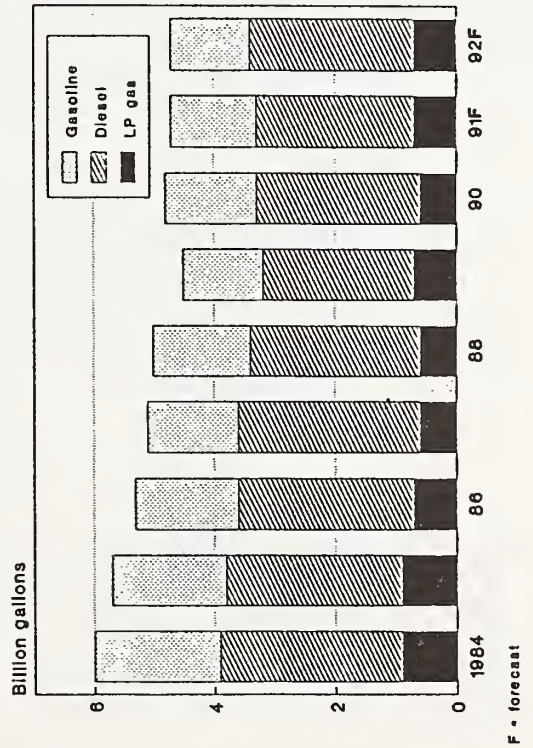
Tractor Unit Sales



Sales of Self-Propelled Combines



Farm Fuel Use



Crude Oil and Diesel Fuel Prices

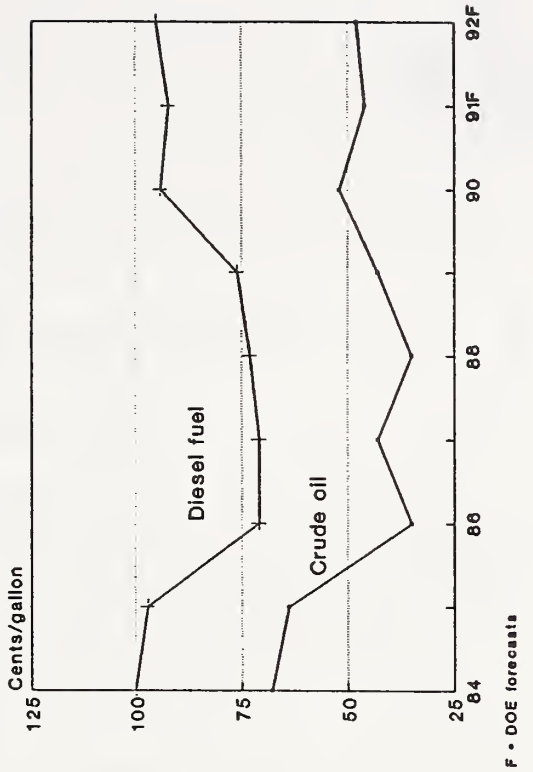


Table 1--Seedling rate and cost for selected crops in major producing States, 1991 (Preliminary)

Crop/ State	Per acre				Per acre			
	Acres planted	Seeds planted	Cost	Rate	Acres planted	Seeds planted	Cost	Rate
Soybeans								
AR	3,200	58	11.74		11,300	25,511	21.09	
GA	650	49	10.24		5,800	25,027	20.26	
IL	9,200	66	16.44		12,200	25,285	21.62	
IN	4,450	67	15.85		2,600	24,279	20.49	
IA	8,800	61	16.35		6,600	26,601	22.98	
KY	1,150	61	13.54		2,200	22,575	19.87	
LA	1,450	52	12.12		8,500	25,904	21.15	
MS	5,500	68	14.65		2,747	23,120	19.28	
MO	1,900	53	10.38		5,553	27,281	22.51	
NE	4,500	65	15.20		3,800	26,442	22.51	
NC	2,500	61	15.80		3,750	19,111	16.03	
OH	1,350	65	14.09		3,800	25,611	19.16	
OK	3,900	77	16.26					
TX	1,100	53	10.07		60,350	25,099	20.92	
Area	49,650	64	15.07					
Rice								
AR	1,350	125	19.29		2,100	108	8.03	
LA	530	129	21.85		2,600	64	4.86	
Area	1,880	126	20.13		1,800	94	6.74	
Durum Wheat								
MO					13,500	89	6.52	
Area								
Spring Wheat								
MO					3,000	100	6.66	
Area								

This table and the succeeding tables contain preliminary 1991 information. Final tables on seed, fertilizer, pesticide and tillage use during 1991 and additional data will be published in "Agricultural Resources--Inputs Situation and Outlook Report" to be issued in February, 1992.

A/ Non-irrigated.
B/ Irrigated

Table 2--Fertilizer use on selected crops in the major producing States, 1991 (Preliminary)

State	Acres 1/		Acres receiving		Application rate		Acres receiving		Application rate	
	Thousand	N	P205	K20	N	P205	Thousand	N	P205	K20
Corn for grain										
IL	11,300	99	87	85	159	79	104	AR	930	36
IN	5,800	98	94	86	135	78	112	CO	2,300	22
IA	12,200	98	79	77	120	58	68	IO	700	51
MI	2,600	97	89	90	124	63	95	IL	1,400	96
MO	6,600	97	85	83	110	50	63	IN	750	97
NE	2,200	97	76	79	136	54	72	KS	10,800	89
NC	8,300	99	68	34	142	36	21	MM	2,100	96
OH	2,747	98	61	25	129	37	19	MO	1,550	99
OK	5,553	99	72	39	148	35	21	MT	4,500	60
TX	3,800	98	94	91	151	75	103	NE	2,100	80
SD	3,750	83	67	26	71	36	22	MO	10,000	74
UT	3,800	95	93	93	86	44	69	OH	1,100	99
10 State								OK	5,000	92
Total	60,350	97	83	74	129	60	80	OR	800	98
Soybeans										
AR	3,200	11	26	29	22	40	56	TX	3100	54
GA	650	55	63	67	26	45	90	TX	2800	72
IL	9,200	13	22	27	21	60	91	TX	2800	72
IN	4,450	19	28	35	15	41	79	TX	2800	72
IA	8,800	9	9	10	45	51	73	TX	2800	72
KY	1,150	36	53	49	52	63	76	TX	2800	72
LA	1,450	3	8	8	33	39	57	TX	2800	72
MM	5,500	12	10	10	39	41	53	TX	2800	72
MS	1,900	10	18	18	29	50	59	TX	2800	72
MO	4,500	16	19	21	19	43	68	TX	2800	72
NE	2,500	19	17	8	15	32	20	TX	2800	72
NC	1,350	47	51	59	18	34	87	TX	2800	72
OH	3,900	21	34	48	17	49	91	TX	2800	72
TX	1,100	27	51	53	25	44	58	TX	2800	72
14 State								TX	2800	72
Total	49,650	16	22	25	25	48	77	TX	2800	72
Rice										
AR	1350	98	10	12	134	45	52	AR	1350	98
LA	530	99	82	84	108	47	45	LA	530	99
2 State								2 State		
Total	1880	99	30	32	127	46	47	Total	1880	99

* -- Insufficient data

1/ Acres are harvested for winter wheat and planted for all other crops.

2/ Does not include winter wheat in MM, MO and SD; spring wheat in CO and IA; and durum wheat in MM, MT, and SO.

3/ Non-irrigated.

4/ Irrigated.

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BALANCE SHEET OUTLOOK FOR THE FARM SECTOR IN 1992

James Ryan and Kenneth Erickson
Agricultural Economists, ERS

Farm income forecasts, taken with other projected financial performance indicators, point toward a moderate rate of growth in the farm economy in 1992. A continuing healthy level of farm income is likely to contribute to a nominal rise in farm sector wealth. While most farm income measures will again fall short of record levels attained in 1990, these income indicators remain at levels that support a balance sheet outlook for limited asset growth, stabilized debt levels, and improving equity in a relatively stable farm economy in 1992.

Farm business assets, debt, and equity are each expected to rise 1 to 2 percent in 1992. While these moderate increases are indicative of the stabilizing farm economy, they are projected to lag the general price level rise of 3 to 4 percent. As a result, real (1982\$) asset, debt and equity levels are forecast to decline 2 to 3 percent. At the farm sector level, the slight drop in income and nearly imperceptible loss in real wealth is not anticipated to create additional financial stress.

The economic performance of the farm sector will continue to be affected by the U.S. economy and international developments. Domestic macroeconomic policy and the performance of the U.S. economy will continue to be a major influence. Forecasts of general economic conditions suggest that real domestic GNP growth will be slow through the end of 1992. Internationally, the extent and nature of U.S. financial assistance to emerging USSR and Eastern European countries may impact domestic commodity prices and inventory levels. Generally, an increase in the level of assistance above current projections would have a positive influence on the U.S. farm sector.

Farm Asset Growth Negligible

The value of U.S. farm assets (excluding operator households) rose \$10 billion during 1991, an increase of 1.2 percent. Total assets are forecast to rise to a range of \$850 to \$860 billion in 1992, as the growth rate in asset values improves only slightly. Asset value growth has consistently been in the 1 to 2 percent range annually since 1988, which may reflect a long-run stabilization of the agricultural economy. The real value of farm assets is projected to decline in 1991 and in 1992, as the general rate of inflation is anticipated to exceed the growth in asset values.

Farm real estate assets increased slightly less than \$10 billion during 1991. This 2-percent rise in total farmland value suggests that relatively high cash income levels did not dramatically increase investors' expectations of long-run profitability of farming. Farmers also evidenced little desire to bid up land prices in attempting to expand operations. The projected income dip in 1992 should result in an even more modest land value appreciation rate of 0 to 2 percent.

Nonreal estate asset values are forecast to rise by about \$5 billion in 1992. Livestock inventories are expected to account for about 80 percent of this increase, due mainly to rising cattle inventories and higher year-end prices. Hog inventory values are expected to decline, as larger quantities are offset by lower prices. The value of machinery on farms and financial assets are also projected to register slight nominal increases in 1992, while inventory values of crops and purchased inputs are anticipated to trend steady to slightly lower. Significant increases in assistance to former Warsaw Pact countries could raise farm commodity prices and draw down inventories. While such action would bolster land prices and enhance current farm income, the impact on ending inventory values is not clear.

Farm Debt Stable

Total farm debt is anticipated to increase 1 to 2 percent during 1992. Debt is projected to increase less than 1 percent in 1991, significant only in that it will end a 6-year run of annual debt reductions. Stable land values and healthy cash income of farm borrowers are easing lenders' concern with loan defaults arising from land value declines. Farmers continue to show restraint in incurring debt to purchase land and replace machinery and equipment.

- o With debt levels generally lower than in the early 1980's, farmers appear to be in a better financial position to withstand 1992's projected income dip. When income fell during the early 1980's, farmers had substantially higher debt servicing needs.

The traditional institutional farm lenders, the Farm Credit System (FCS) and commercial banks, are restoring loan portfolio quality by recruitment of quality borrowers. Commercial bank lending should rise by nearly \$2 billion in 1992, as banks report adequate credit availability for qualified borrowers. While the mix of Farm Credit System debt is expected to change over the course of 1992, the total debt outstanding is expected to end the year unchanged from 1991, as an increase in nonreal estate lending is projected to offset an anticipated decrease in FCS real estate debt.

Real Equity Decline Continues

Farm equity, the difference between the value of farm assets and debt, can be viewed as a measure of the overall wealth position of the sector. As a result of falling land values, farm equity dropped by nearly \$250 billion (over 30 percent) between 1980 and 1986. Rapid recovery of the sector resulted in annual equity increases of 10 and 6 percent in 1987 and 1988. This growth rate has since slowed and equity has been trending up at a rate of 1 to 3

percent annually since 1988. About 60 percent of the equity 'loss' during 1980-86 will have been 'recovered' by year-end 1992.

While this trend is often interpreted as a sign of stability returning to the sector, the recent rates of equity growth have trailed the general rate of inflation, which has been in the 3 to 4 percent range during this same period. The result has been annual declines in the real value of farm equity since 1988, indicating slow erosion of the purchasing power of the farm sector's primary store of wealth.

Observed from a longer historical perspective, the farm sector balance sheet does not appear to have fully recovered from the financial crisis of the mid-1980's.

- o Adjusted for inflation, farm sector equity value at the end of 1992 will be slightly less than its level at the end of 1962.

The real value of farm assets has increased less than 2 percent over the period of 1962-92. During this 30-year period, the inflation-adjusted level of farm debt has increased over 17 percent. While the intensified capital requirements and elevated financial management awareness of farm operators can partially explain the relative increase in debt financing of U.S. farming, this less favorable debt-to-equity position suggests a more rigid, less flexible financial structure at the end of 1992 than that existing 30 years earlier.

In real terms, farm equity has generally trended downward since peaking in 1980, including projected declines of over 2.5 percent in 1991 and in 1992.

- o In real terms, farm sector equity at the end of 1992 is projected to be the second lowest of any year in the 1962-92 period.
- o Of the 10 lowest real farm equity levels recorded during 1962-92, 7 have occurred since 1984.

Farm Sector Returns

The farm sector is showing signs of continuing recovery, despite the gradual erosion of farm equity. Relatively high rates of return to farm equity and assets are expected to continue through 1992. The rate of return on equity from current income is expected to be 3 to 4 percent in 1992. Rates of return on equity and on assets are projected to continue the relatively favorable levels of recent years.

Other measures of financial performance suggest a stable to modestly improving farm sector during 1992. While 1992 cash income should allow adequate funds for debt servicing, the aggregate farm debt-to-asset ratio continues to improve. Returns to operators, a residual income measure for farm businesses, is expected to fall slightly.

Net cash income from farm operations is to be computed by adding interest expenditures to net cash income. This financial indicator measures the net

cash income that is being generated by the farm sector, after it meets all non-interest cash production expenditures. It represents the cash income that would be available to the farm sector if it was debt-free and, therefore, interest expense-free. (It is presented in the accompanying graphs as net cash available). In real terms, this measure has been relatively stable since the early 1950's. The portion of this available cash that was paid as interest to farm creditors rose from less than 16 percent in the early 1970's to almost 37 percent by the end of 1981. With the rapid drop in farm debt levels and interest expenses in the mid-1980's, this ratio fell to less than 20 percent by the end of 1988. It is anticipated to remain in the 18 to 20 percent range through 1992.

The relatively high levels of net cash income from farm operations generated during the 1980's was depleted by the large proportion of that cash that was paid to creditors in interest payments. These indicators support the view that the economic stress of that period did not result from lower income, but from a changing financial structure that required a larger income share be distributed to creditors.

Entering 1992, the reduced need to pay interest from net cash available suggests that, despite the gradual erosion of real farm equity, farmers are now better able to cope with the slightly lower net cash income.

Farm Lender Shares Change

Even though total farm business debt is forecast to increase slightly during 1992, the loan portfolios of individual lenders may change dramatically. The decrease in debt held by Farmers Home Administration (FmHA) should be more than offset by increased loan volumes of other farm credit sources.

- o As FmHA continues to resolve its problem loan portfolio, FmHA farm debt could fall by another \$2 to \$3 billion in 1992. On June 30, 1991, over 40 percent of FmHA debt was owed by delinquent borrowers. Principal and interest payments delinquent more than 4 years totalled over \$5 billion.

In recent years, banks have gained market share through aggressive pursuit of limited risk, high quality mid- to large-scale farming operations. In the process, banks have lured away many of the Farm Credit System's most desirable borrowers. As FCS restructuring and recovery continues, the System is becoming more aggressive in regaining market share.

- o Commercial banks are expected to hold almost 37 percent of all farm debt by the end of 1992, while the Farm Credit System's share is anticipated to be about 25 percent. This represents a reversal of 1984 market shares of these two lenders.
- o Historical trends indicate that banks and the FCS have dramatically reversed market shares several times.

Lender Loan Losses Decline

To a large extent, farm lenders were reluctant partners in the resolution of the financial crisis of the 1980's. Farm business debt fell from \$193 billion at the beginning of 1985 to an estimated \$137 billion at year-end 1991, a drop of \$56 billion. Over \$21 billion of this decline can be attributed to loan charge-offs taken by lenders during this period. During the recovery of the late 1980's loan loss rates for all lenders other than FmHA have declined substantially. The improved quality of most lenders loan portfolios suggests that farm creditors will be better able to deal with those farmers most affected by the anticipated income drop in 1992.

Lenders with the primary function of supplying credit to farmers appear to have been more adversely affected by these losses than lenders with more diversified portfolios.

- o Estimated commercial bank loan losses totalled over \$5 billion during 1984-90. While these losses contributed to the rural bank failure rate, total bank farm debt increased by almost \$1 billion during this period. Banks are expected to report net recoveries of previously written-off loans in both 1991 and 1992.
- o Farm Credit System losses were almost \$4 billion during 1984-90. However, FCS loans outstanding dropped almost \$28 billion, a decline of 43 percent. The System reported net recoveries in 1989. Recovery of past losses is expected to continue through 1992.
- o Farmers Home Administration losses have increased dramatically in recent years, as FmHA has begun to account for losses that had effectively occurred in the early 1980's. By the end of 1992, FmHA losses (of principal and interest) may approach \$13 billion.

Farmer Mac Not a Factor in 1992

Farmer Mac was authorized by the Farm Credit Act of 1987, creating a secondary mortgage market for farm real estate loans. A shortage of reasonably priced farm credit was perceived to have contributed to the farm financial crisis of the mid-1980's. At the time of its creation, Congress envisioned Farmer Mac operating in a fashion similar to the successful secondary markets for residential mortgages.

- o After 4 years, Farmer Mac is not yet an active participant in the farm mortgage market. Even though the number of authorized poolers has recently increased, Farmer Mac will not be a significant influence on farm credit availability in 1992.

Farmer Mac's future potential will ultimately be determined by originations of eligible new loans, and by rewriting existing debt to a format consistent with Farmer Mac packaging. While Farmer Mac was not designed to address the needs of farm operators who were financially stressed at the time of its enactment,

its potential will be strongly impacted by its usefulness in servicing currently indebted farm operators.

USDA research suggests that qualifying lenders originate an annual loan volume of approximately \$7 billion. Less than half of this amount would have qualified for pooling under the precise set of credit underwriting and loan repayment standards for mortgages that Farmer Mac has developed. Expected eligible originations could only marginally sustain a viable secondary market. Farm real estate debt outstanding at the end of 1991, \$73 billion, plus an additional \$64 billion nonreal estate debt, could conceivably be restructured to meet Farmer Mac eligibility requirements. However, most of this volume will not meet Farmer Mac qualifying standards.

- o Farmer Mac will do little to increase the credit available to currently indebted farm operators.
- o Only 18 percent of debt owed by farm operators would qualify under Farmer Mac standards, according to financial measures constructed for respondents to USDA's 1989 Farm Costs and Returns Survey. Qualifying operators are financially sound. Generally, they have no difficulty in obtaining necessary financing under any market conditions.

Conclusions: Recovery Slowed, Equity Eroding

All is not positive for the sector in 1992. While the rest of the economy sluggishly recovers from recession, the farm income decline in 1992 is anticipated to be much less severe for farmers than that of the 1980's. However, while it appears that farmers will make little financial progress in 1992, most will be able to avoid major set-backs.

Overall, the financial position of farmers entering 1992 appears to be continuing to gradually erode from the heights it attained in the late 1970's. While the combined effect of gradually increasing asset values and reduced debt loads have greatly lowered farmers' vulnerability to short-term fluctuations in income, the long term impacts of declining real equity values can not yet be determined.

While the health of the farm economy through the early 1990's is not a certainty, farmers and their lenders now appear reluctant to respond to the relatively high income levels of recent years with renewed debt-financed expansion. Macroeconomic forecasts of a general inflation rate of 3 to 4 percent through the mid-1990's suggest continuing declines in real farm wealth, as farm asset and equity growth rates will be hard pressed to match this inflation rate.

As the globalization of world markets further unfolds in the 1990's, politically resolved trade and assistance issues may significantly change economic relationships. The market conditions emerging from trade reform and agreements can be expected to greatly affect the sector's financial performance and well-being.

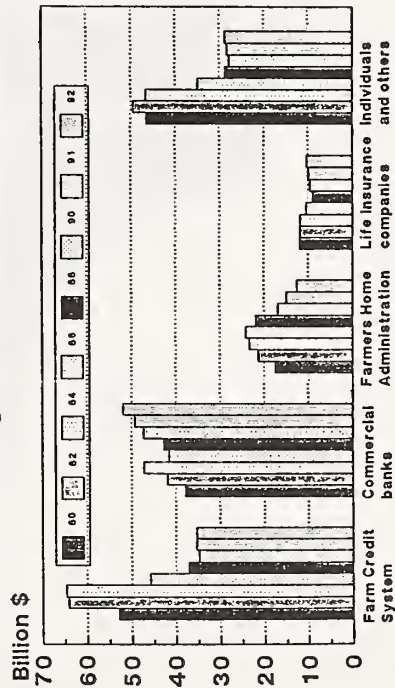
Farm balance sheet in 1992 shows slight improvement in nominal terms, slight decline in real terms

	1987	1988	1989	1990	1991	1992
Current dollars						
Billion dollars						
Assets	772.5	805.1	819.7	834.6	845.0	850 - 860
Debt	144.4	139.4	137.1	136.5	137.3	136 - 142
Equity	628.1	665.7	682.6	698.1	707.7	710 - 720
Deflated dollars (1982 \$)						
Assets	658.0	663.7	649.0	634.7	617.2	600 - 610
Debt	123.0	114.9	108.6	103.8	110.3	95 - 100
Equity	535.0	548.8	540.5	530.9	516.9	500 - 510

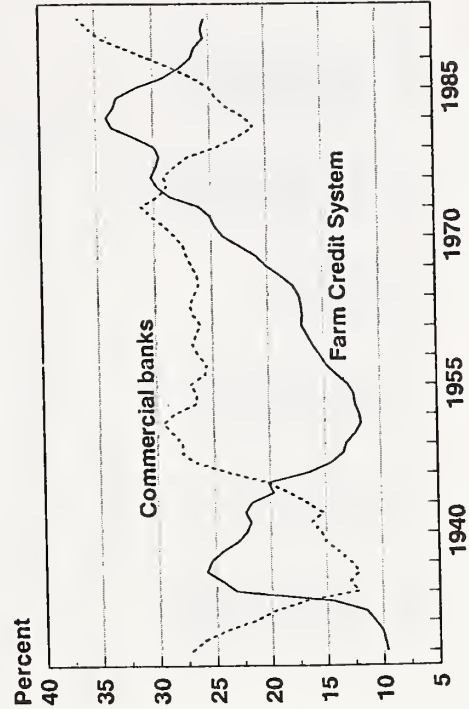
Asset values to rise slightly in 1992—Real estate accounts for 73 percent of farm assets



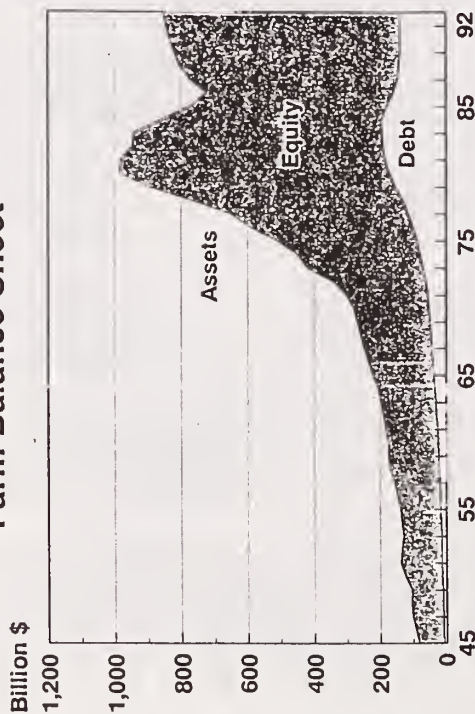
Farm debt is rising at banks, stable or falling with most other lenders



Lender Market Shares



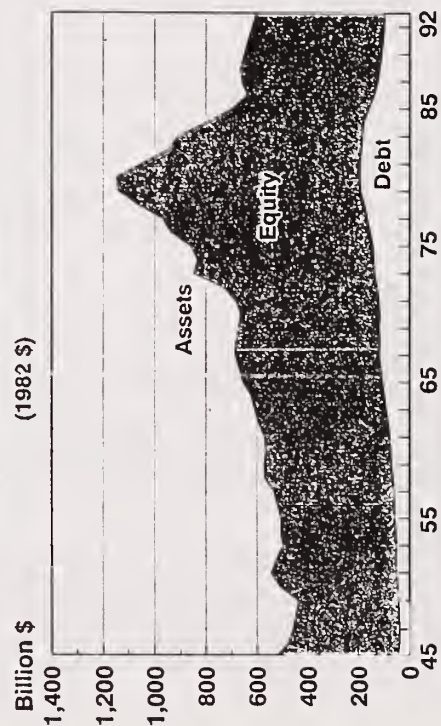
Farm Balance Sheet



Farm balance sheet changes, 1962-92
(Current dollars)

	Assets	Debt Percent	Equity
1962-80	421.1	524.7	404.0
1980-86	-26.3	-5.9	-30.5
1986-92	17.7	-11.5	25.8
1962-92	352.0	420.6	340.7

Farm Balance Sheet



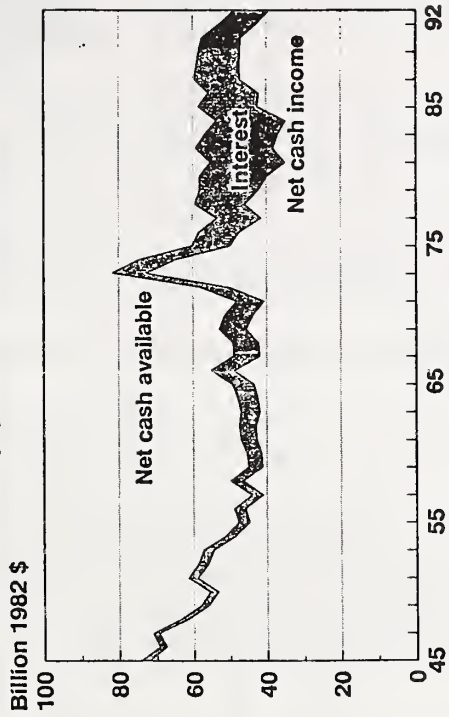
Farm balance sheet changes, 1962-92
(1982 \$)

	Assets	Debt Percent	Equity
1962-80	94.0	132.5	87.6
1980-86	-44.5	-29.1	-47.6
1986-92	-5.5	-28.9	1.0
1962-92	1.7	17.1	-0.8

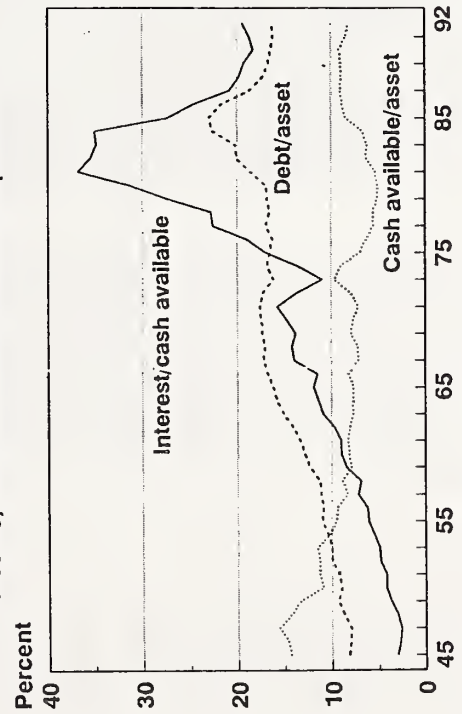
Measures of Financial Performance

	1980-84	1985-86	1987-90	1991	1992
Profitability					
Return on equity	-0.1	1.4	3.6	3.4	3 - 4
Liquidity					
Debt service	19	16	12	11	10 - 13
Solvency					
Debt/asset	19.7	22.3	17.4	16.3	16 - 17
Financial efficiency					
Interest/gross cash farm income	12.9	10.8	8.1	7.4	7 - 8

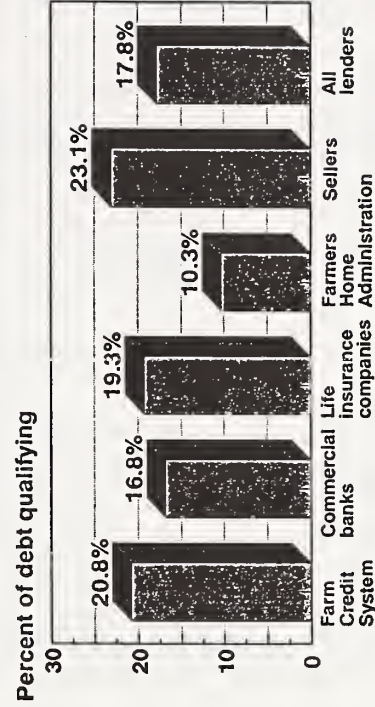
Net cash available was high during 1980's, but interest payments took a larger share



Interest now taking less of available cash income, other financial ratios also improve



Most farm operator debt would not meet Farmer Mac qualifying standards



ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture

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Outlook '92

For Release: Wednesday, December 4, 1991

IMPACT OF THE CLEAN AIR ACT ON AGRICULTURE

Roger K. Conway
Director, Office of Energy, USDA

Introduction

The implementation of the Clean Air Act Amendments of 1990 will have largely positive effects on the agricultural sector, since the demand for agriculturally clean-burning fuels such as ethanol and biodiesel will increase. One of our speakers will be discussing biodiesel, so I will focus my attention on ethanol.

Ethanol production affects both the demand for and supply of grain. The demand for corn rises with increases in ethanol production since corn is used as a feedstock.

Increased ethanol production increases corn prices. The size of the increase depends on how much corn ethanol producers use and the ability and willingness of farmers to shift acreage into corn production. Farmers would be expected to shift from soybeans to corn depending on the market price of corn and the Government incentives in place because corn prices would be higher.

Increased ethanol production would lower oilseed and protein market prices initially as greater amounts of protein feed and corn oil coproducts are supplied. However, soybean supply would decline and, at least partially, offset the fall in soybean prices as farmers substitute corn for soybean acreage. Corn prices relative to soybean prices would ultimately move back toward their long-term relationship reflecting relative production costs.

Increased ethanol production would reduce farm support program outlays because the additional ethanol production would increase the prices of corn and some other grains. There would be fewer farmers defaulting on their Government-based loans (reducing Federal outlays to cover loans losses and storage costs of the forfeited crops), reduced Federal deficiency payments to farmers (as grain prices rise toward or surpass the federally established

target price) and lower Federal payments for acreage diversion (as the incentive for farmers' participation in agricultural programs decrease).

Some questions have been raised about whether the U.S. livestock industry could absorb increased amounts of corn gluten feed and meal. Studies by animal nutritionists such as Ensminger and Olentine indicate these coproduct feeds are readily substitutable in livestock feed rations for ruminants. Monogastric hogs and poultry may find less substitution possibilities with these coproducts.

Ethanol Production and the Agricultural Sector

The issue of capacity constraint is one that is often raised when ethanol production expands to considerably larger levels than we see currently. To assess the potential effects from additional ethanol production on agriculture, we analyzed a case where annual ethanol production will expand to meet an assumed ethanol demand of 5 billion gallons by 2000.

In the event of a 5 billion gallon ethanol market by the year 2000, the main conclusion of our analysis is as follows:

- o Farm income is \$1.7 billion higher. Major crops rise by 2.9 billion, but may be offset somewhat by lower livestock income. Our model results may underestimate the substitution possibilities between the coproducts and corn. Other studies have indicated a neutral effect on livestock income.
- o Corn prices are 17 percent higher and the prices of other feed grains (barley, sorghum and oats) also rise. Corn acreage planted rises by 5.5 million acres while soybean plantings fall by 1.6 million acres.
- o Assume a 5 percent ARP in the year 2000 and a deficiency payment rate at \$0.27 per bushel. With a 5 billion gallon ethanol market there would be no ARP and the market price would average above the target price (assumed to be \$2.75 per bushel, as in current law). A corn program, assuming it existed in present form, would be functioning as a safety net program, outlays would be zero and farmers would not have to idle land. Deficiency payments fall by \$1.8 billion in 2000.

Rural Development

Increasing annual ethanol production to 2 billion gallons by 1995 is estimated to create almost 31,000 jobs nationwide, largely in rural areas.

Increasing annual ethanol production to 5 billion gallons by 2000 is estimated to create 160,000 jobs nationwide, (42,000 direct and indirect jobs from ethanol processing, 38,000 temporary jobs from construction and 50,000 jobs from added corn production).

Most current ethanol production is located in the Midwest using larger plants in small cities, most often thought of as located in rural areas. One exciting prospect also offering employment potential is the development of operations integrating ethanol production with other agricultural activities, such as production with a feedstock or utilization of coproducts. Examples include Garden City, Kansas, where ethanol coproducts are used in cattle feedlots, greenhouses and for aquaculture, an Idaho plant that uses waste from potato processing as a feedstock and two California plants that use cheese whey from dairy processing as a feedstock. Grain prices can be \$0.20 to \$0.30 per bushel lower away from major transportation hubs. While this situation may not be economically practical for large operations, smaller integrated processes may be able to take advantage of local grain producer markets. Production from low- or no-cost wastes reduces feedstock costs. Major savings in energy costs also occur when the dried distillies grain can be used without drying locally.

Research Efforts

To address the issues that this analysis raises and further enhance the benefits to the entire agricultural community, research and development efforts will be a key. Our analysis assumed a market for the ethanol coproducts exists. Research will be undertaken to produce more ethanol and other high value products from the coproducts, to conduct feeding trials to enhance the substitution possibilities for livestock, and to use the protein from the coproducts to make food for humans. Many developing countries are protein deficient in nutritional needs. Research efforts will also be focused on developing high value products from soybeans. Development of biodiesel technology offers an important potential market for oilseeds like soybeans. In the future, energy crops may provide economic opportunities for those areas unable to switch to starch-based feedstocks.

More generally, one must consider opportunities in reducing production cost and enhancing the capabilities of grain and alternative feedstocks, finding ethanol production technologies capable of using a broader set of feedstocks and developing coproducts from both new and existing technologies.

Net corn costs can be lowered by producing additional value-added coproducts, improving ethanol yields and converting the cellulose in corn to ethanol. Energy costs could be reduced by employing new, state of the art processing technology.

Glycerol, lactic acid and other low value, high-volume materials could be recovered from the clarified thin stillage and steep water. There would also be evaporation savings.

Pervaporation eliminates water by evaporating it through a water selective membrane. The use of pervaporation not only lowers energy consumption and overall production costs but also enables the production of a purer product.

Converting the cellulose and hemicellulose left in the corn after processing could increase ethanol production by as much as 20 percent. Also, the protein content will increase in the feed coproduct adding to its value. Transportation costs will also be reduced as a result of this process.

Researchers are working to design value-added products from the coproducts such as human food products or as raw materials to be further processed. The protein fraction can be extracted and further refined. Important nutrients such as amino acids and vitamins could also be further refined and enhanced. High lysine corn development is underway.

Technologies that may prove beneficial in the longer term include alternative feedstocks such as potatoes, sweet potatoes, sweet sorghum and other grains. These are no particular technological hurdles to produce ethanol from these crops. Rising corn prices and reduced conversion costs could make these attractive feedstocks that can be grown on a broader range of lands and climates.

Bioengineering and traditional plant breeding technologies that increase per acre yields or increase starch and sugar contents of corn and other crops helps reduce feedstock costs. For example, there may be ways to add more starch to a kernel of corn, add starch content to the leaves and stalks and make the cellulose in the corn plant easier to break down into starch.

Processes to break down the various types of cellulosic biomass materials into sugar that can then be fermented will be an active research area. Breakthroughs in biomass pretreatment and conversion will allow higher yields from grain since part of the grain is cellulose. Herbaceous plant matter could be used. Crops such as alfalfa and cellulosic material such as agricultural residues could be fermented. These technologies could ultimately allow ethanol production from woody plants and a wider variety of organic wastes.

Coproducts derived from these technologies will be quite different from existing ethanol coproducts and market analysis will be undertaken. It is conceivable that, in some cases, ethanol would be a complementary output for some of these

technologies with demand for high-valued chemicals derived from the process driving joint production.

Cellulose conversion and processing of renewable resources into oxygenated fuels and biochemicals will be the next major development in agriculture. USDA will work with the Department of Energy on research and development in the growth, harvesting, transportation, storage, processing, fermentation and final product recovery related to cellulosic materials. Fundamental research on the biochemical, chemical and microbial transformation into value-added products is critical and will be a prime focus. These developments are also likely to lead to improved economics in the current corn processing industries and result in multiple benefits to agriculture.

The payoff to agriculture is evident from our analysis. USDA will focus its research and development efforts to further enhance and expand the benefits to the agricultural sector. The intent of USDA's efforts is to use renewable resources to create products which are environmentally benign. We believe the Nation will benefit from the success of the program.



Outlook '92

For Release: Wednesday, December 4, 1991

ALTERNATIVE DIESEL FUELS FROM OILSEEDS

Earle E. Gavett, Consultant and Former Director,
Office of Energy, USDA

Our previous speakers have devoted considerable time to the gasoline sector and to oxygenates that would replace gasoline. I want to discuss another fuel--diesel fuel.

In a barrel of crude oil our refiners recover about 37 percent of the product as gasoline, 4 percent as jet fuel, and 17 percent as diesel fuel. The remainder is miscellaneous products, principally heavy residual oil.

By volume, the United States uses about 50 billion gallons of diesel fuel annually. Of this, over 3 billion gallons are used on farms to power tractors, combines, trucks, and other farm equipment. The bulk of the remainder is used to move food and other essential goods of commerce by truck, rail, and barge and for transporting people by bus. Most of this is for nondiscretionary purposes.

The Clean Air Act Amendments of 1990 (CAA) included a number of provisions that affect diesel fuel. These provisions can have a significant impact on farming and the entire agribusiness sector. I will address them as they appear in the Act.

Sec. 217 DIESEL FUEL SULFUR CONTENT

Effective October 1, 1993, no motor vehicle diesel fuel shall contain a concentration of sulfur in excess of 0.05 percent by weight. Such fuel shall also have a minimum cetane rating of 40. Cetane is the element that causes diesel fuel to start combusting when compressed in an engine's cylinder.

Sulfur is of major environmental concern as sulfur dioxide emissions are one of the prime elements in smog. Diesel fuel has had a fairly high sulfur content over the past few years. To reduce the level of sulfur in diesel, refiners must make expensive modifications to their facilities and this will result

in a higher cost of producing diesel. We have been told that to meet the 0.05 percent provision will add up to \$0.05 per gallon to the price of diesel.

These CAA provisions do not apply to nonmotor vehicle uses such as home heating. To differentiate these distillate products, EPA may require that distillates not intended for motor vehicle use be dyed in order to segregate it from motor fuel. We are uncertain whether the petroleum industry will maintain two separate distillate products, or make all distillate fuel comply with the lower sulfur level. There is a higher cost to produce it. But, there is a major cost to distributors to maintain separate tanks and truck compartments for servicing all customers' needs.

Space heating uses less than 5 percent of distillates nationwide. So, it might be cheaper for the petroleum industry to process all the distillates to the new standard. But, the impact will hit small refiners and those serving customers in the Northeast and upper Midwest where home heating by fuel oil predominates.

Sec. 222 NONROAD ENGINES AND VEHICLES

This requires EPA to conduct a study of emissions from nonroad engines and vehicles (except locomotives) to determine if such emissions cause, or significantly contribute to, air pollution. Within 12 months after completion of this study, if EPA determines that nonroad engines and vehicles are significant contributors to ozone or carbon monoxide concentrations in more than one area which has failed to attain national ambient air quality standards, then EPA shall promulgate regulations to control emissions for those classes or categories of nonroad engines or vehicles which are significant polluters.

EPA circulated a draft report of the study and held a workshop on the study in October in Michigan. My assessment of the study is that nonroad engine and vehicle emissions have been determined to adversely affect air quality in a number of nonattainment areas. Therefore, it will be incumbent on EPA to promulgate standards regulating emissions of nonroad engines and vehicles before November 15, 1992.

Agricultural equipment appeared to be a significant contributor of volatile organic compounds and oxides of nitrogen, with lesser contribution to carbon monoxide emissions. What impact such emission regulations will have on prices and operation of farm equipment is anybody's guess at the moment.

Sec. 229 CLEAN FUEL VEHICLES

While the bulk of the language addresses gasoline fueled vehicles

and alternatives to gasoline for such clean vehicles, diesel fuel is also included. Significant efforts are underway to develop cleaner burning diesel engines and to use alternative fuels such as methanol and ethanol for diesel engines.

Sec. 231 ETHANOL SUBSTITUTE FOR DIESEL

This requires EPA to contract with a laboratory which has done research on alcohol esters of error oil to evaluate the feasibility, engine performance, emissions and production capability associated with an alternative to diesel fuel composed of ethanol and high erucic acid error oil. A report from this study is required within 3 years of issuing the contract. To date, I understand that EPA has not issued such a contract, due to lack of funds.

Vegetable oils can be used as substitutes for diesel. During the late 1970's and early 1980's a significant effort was undertaken by USDA with help from DOE and some land grant institutions to develop alternative fuels for diesel engines. We believed farmers could produce their own fuel. Early efforts were largely unsuccessful. Unprocessed vegetable oil is highly viscous compared with diesel and caused major problems in engines. The viscosity restricted fuel flow, particularly in cold weather. The raw oil had incomplete combustion resulting in severe engine deposits, ring sticking, injector coking, and contamination of crankcase oil. Use of unprocessed oil inevitably led to engine failure, so research efforts were sharply reduced.

Some of our scientists believed that a simple process could be found to modify vegetable oil to make an acceptable diesel substitute. With limited USDA funding, University of Idaho researchers developed a process where vegetable oil (rapeseed oil) is reacted with an alcohol (methanol) in the presence of a catalyst (potassium hydroxide). This process is called transesterification. Esterifying rapeseed oil results in a highly acceptable diesel fuel substitute that we call Biodiesel.

Only limited quantities of Biodiesel are produced in this country at small pilot scale facilities such as at the University of Idaho. We have conducted long term engine testing on a few engines and find no degradation related to fuel after over 4,000 hours of testing on 100 percent Biodiesel. We have had insufficient funds to do major emissions testing of Biodiesel. The EPA study under Sec. 231 is intended to address this need. We did find that biodiesel had virtually no visible exhaust, and when blended with diesel it sharply reduced particulate emissions. This is consistent with EPA requirements under PM-10 standards.

We have shared research results on processing oilseeds with

researchers in Austria. The Austrian Parliament asked their agricultural scientists to develop alternative crops for which there might be a market. Austria was suffering with granaries full of wheat as they had lost their markets to the European Community as a result of its export enhancement program. Researchers felt that winter rape was a candidate crop that would fit well in crop rotations. To produce their own diesel in a landlocked country like Austria with little domestic fuel resources was a worthwhile goal. The Parliament exempted Biodiesel for farm use from road taxes. Test facilities produced enough Biodiesel for endurance and emissions testing. Tractor manufacturers warranted use of Biodiesel and environmentalists hailed the reduced level of emissions. In addition, Biodiesel has been found to be nontoxic. Spills are readily cleaned up by soil organisms.

Austria has mandated that Biodiesel shall be used in all pristine areas like the Alps. This will avoid soil and water contamination from fuel spills and improve air quality, too. Currently, they are evaluating a possible mandate to use Biodiesel in metropolitan area buses. The Swiss Government is expected to mandate Biodiesel use throughout Switzerland as a means of improving the environment.

Environmentally, Biodiesel has only 30 to 40 percent of the particulate level of diesel. Volatile hydrocarbons are reduced 30 percent, and when engines are tuned for Biodiesel use NOx levels can be lower than diesel. Sulfur level is 0.001 percent. These emission levels come from studies in Austria, France and Switzerland.

Biodiesel is a better fuel than diesel, it is renewable, environmentally superior, and can be grown and processed in most areas of the United States from a variety of oilseed feedstocks. But, what about the economics?

Biodiesel economics are not well established in this country. I am going to present a case that utilizes the minor oilseed provision in the 1990 Farm Bill. This permits production and sale of minor oilseed crops on set aside acres without farmers losing their deficiency payments.

In 1991, industrial rapeseed production costs are estimated at \$180 acre, including a land charge of \$55. All costs other than land equal \$125 per acre. On nonirrigated land we expect yields to average 2,000 pounds of seed. Crushing in a small mechanical extruder would yield 1,300 pounds of meal and just over 700 pounds of oil (93 gallons) per acre. Using equivalent values of the meal with soybean meal as corrected for protein level (32-44 percent) and 1,286/2,000 pounds times \$200 per ton gives a meal value of \$94 per acre. This leaves a net cost of raw oil at \$31

for 93 gallons or \$0.33 per gallon.

Using a farm scale processing facility with an annual capacity of 30,000 gallons, we estimate investment and operating costs at \$0.34 per gallon. These processing costs exclude charges for labor, process energy, repairs and maintenance, and disposal of the process wash water. It also excludes a credit for the glycerine coproduct.

The total cost of Biodiesel would appear to be from \$0.67 to \$0.75 per gallon when processed at a farm scale plant.

A larger scale production plant having a capacity of 175,000 gallons annually was the subject of an engineering-economic analysis by scientists at the Chemical Engineering Department, University of Idaho. The size was selected based on a standard size, commercially available oilseed screw press. Investment and operating costs average \$0.78 per gallon. Adding the raw oil cost to the processing cost brings the total cost of Biodiesel to \$1.11 per gallon.

We have serious questions over the accuracy of the processing costs for these small size facilities. Hopefully, the team of U.S. researchers who have just returned from inspecting plants in

Austria with annual capacity of 3,000,000 gallons or more will be able to provide much better cost data. The USDA's 1990 Farm Production Expenditures Survey reported that farmers purchased 2.946 billion gallons of diesel fuel and paid \$2.418 billion or \$0.90 per gallon. It may be possible for a farmer, or group of farmers, to produce Biodiesel about as cheaply as purchasing diesel.

Environmentally, a better use of Biodiesel would be to sell it in areas that have not met national ambient air quality standards. This premium quality fuel should bring higher prices in nonattainment areas than diesel fuel.

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OUTLOOK FOR RED MEATS

John Ginzel

Agricultural Economist

Economic Research Service

Major factors shaping the 1992 red meat outlook are record large total meat supplies and a sluggish economy trying to recover from a recession. Retail meat and farm prices are expected to be lower than in 1991. As a result, producers' margins will be pinched, compared with this year, due more to lower livestock prices at the farm level than to changes in feed costs. Feed grain and protein meal prices for 1992 are expected to be little changed from this year but with lower hay prices. More growth is expected for beef exports in 1992 than for pork, unless food aid programs are developed that expand red meat exports. Beef imports are expected to decline but, pork imports are forecast to increase slightly.

FACTORS AFFECTING THE DEMAND FOR RED MEATS AND LIVESTOCK PRODUCERS IN 1992.

Moderate GNP Growth Expected for 1992

Moderate Real Gross National Product (GNP) growth is expected in 1992, at about 3 percent, compared with a fractional percentage decline this year. The recovery from the recession in 1992 is likely to be less robust than past recoveries, at least partly because this recession was relatively shallow compared with most of the recessions in the 1970's or 1980's. Recent developments indicate that quarter-to-quarter growth likely will be erratic for some regions and for some industries.

Inflationary pressures are expected to remain under control and support further reductions in interest rates into at least the first half of next year. The bank prime rate this year is expected to average around 8.5 percent compared with 10 percent last year. In 1992, the prime interest rate is likely to average below 8 percent.

Unemployment in 1992 is expected to decline by about half a percent point from this year's rate of 6.7 percent but still be above last year's 5.5 percent. Overall, per capita real disposable income is expected to grow in 1992 by around 2 percent after declining in 1991 and 1990. Improving consumer confidence with increasing disposable income is expected to be a major factor contributing to the recovery in 1992.

Feedgrain and Protein Meal Costs Little Changed in 1992

The corn crop is projected to be down 447 million bushels from 1990, leading to a drop in the carryover stocks in 1992. The September 1, 1992, corn carryover is projected at 1,284 million bushels, down from 1,521 million this September. The farm corn price is expected to average \$2.15-\$2.55 per bushel in 1991/92, compared with \$2.28 in 1990/91. Given the tight corn carryover expected September 1, 1992, corn prices will be particularly sensitive to weather developments in the spring and summer of 1992.

Soybean production in 1991 is estimated at 1,962 million bushels, up slightly from the last 2 years. Prices in 1992 are expected to be little changed from the last 2 years, averaging \$165 to \$185 per short ton for 44 percent soybean meal at Decatur.

Hay stocks should be adequate in most areas this year to support supplemental feeding an expanding cattle herd. Stocks expanded due to an increased carryover and larger production. Hay production this year was estimated at 157 million tons, up 7 percent from a year ago, due to a 3-percent rise in harvested acres and a 4-percent greater yield per acre. The farm price for all hay dropped nearly 20 percent below a year earlier in October as alfalfa hay prices declined 22 percent from the tight supply situation of a year ago, while the price of other hay was down 10 percent.

Expansion in Both Red Meat and Poultry Consumption in 1992

Red meat consumption is expected to expand nearly 4 pounds per capita and provide increasing competition to the poultry sector. As a result, poultry production is expected to continue increasing, but at a slower growth rate than in recent years. The competition among the meats will be intense in 1992, particularly for processing type meats. Overall, total retail meat consumption is expected to be about 223 pounds per capita, up 7 pounds from this year's record 216 pounds, and well above the 210 pounds average in 1988-90.

CATTLE SECTOR:

Cattle Herd Expansion Accelerates

Favorable cash returns above cash expenses for cow-calf operators and ample forage availability are stimulating the beef cow herd expansion. The 1991 calf crop is estimated at 40.1 million head, a fractional percentage expansion. For 1992, the calf crop is expected to expand over 2 percent from this year, to around 41.1 million head, the strongest expansion since 1980.

Cow-calf operators have had positive cash returns above cash expenses since 1986. In 1990 and 1991, cash returns were the highest since 1979. Returns are expected to decline in 1992 from this year's cyclic high as stocker and feeder prices decline. The cyclic peak in the size of the cattle herd is not expected until the mid-1990's.

Total Supply of Feeder Cattle Continues To Be Tight

The total supply of feeder cattle is expected to be tighter compared with the supply in the early 1980's. But, it is expected to expand in 1992 and beyond due to the expanding calf crops, continuing large numbers of stockers and feeders imported, and smaller numbers of calves slaughtered for veal. Market incentives continue to encourage shifting the majority of feeder cattle

through feedlot programs. However, fewer feeder cattle are now needed to produce the same amount of fed beef due to marketing cattle at heavier weights.

As a result of the reduced placements on feed this past spring and summer, the number of yearling cattle outside feedlots on October 1 was up 25 percent, compared with a year ago. Ample forage supplies and negative feedlot returns in recent months have resulted in sharply lower numbers of heavier feeders placed on feed.

Cattle Slaughter and Beef Production To Expand in 1992

Commercial cattle slaughter is expected to expand in 1992 to 33.3 million head, up less than 2 percent from 1991, the first year-to-year increase since 1986. Cattle slaughter in 1991, forecast to be 32.7 million head, is the smallest since 1964. The greatest expansion is expected for fed cattle in 1992. Fed cattle are expected to represent about 79 percent of the slaughter mix, up from this year's 78 percent. Given a tight feeder cattle supply, present feedlot capacity, and consumer preference for fed beef, non-fed steer and heifer slaughter is likely to continue to be at reduced levels in 1992.

Cow slaughter in 1992 is forecast to rise about 3 percent, compared with this year's cyclical low near 5.5 million head. Beef cow slaughter is expected to continue to be at low levels as cow-calf operators have a strong incentive to retain cows for breeding herd expansion. Next year, beef cow slaughter will likely increase modestly as more heifers calve and as operators expand culling rates for older cows. This year, beef cow slaughter was well below last year. Dairy cow slaughter expanded in 1991, due to reduced milk/feed price ratios.

Beef production in 1992 is expected to increase about 1 percent from this year. Average cattle dressed weights are expected to begin to stabilize next year following the increase of 17 pounds per head this year, a 2-percent increase. Presently and for much of 1991, producers have had a strong incentive to market cattle at heavy weights. Beef production this year expanded solely due to the incentives to market cattle at heavy weights. The incentives to market cattle at heavier weights are not expected to continue to be as strong in 1992.

Further Declines in Veal Production and Slaughter in 1992

Commercial veal production in 1992 is expected to decline about 8 percent compared with 1991. Veal production in 1991 declined 8 percent, as heavier dressed weights partly offset the 20-percent decline in calf slaughter.

Calf slaughter has declined sharply over the past several years as increasing numbers of calves are drawn out of slaughter into feedlot programs. As recently as 1986, commercial calf slaughter was 3.4 million head but is forecast to decline to 1.4 million head for 1991 and 1.3 million head for 1992.

The slaughter of high valued formula fed veal calves has remained little changed since 1986, but sharp declines have occurred for bob calves-- young calves weighing under 150 pounds, liveweight-- and non-formula fed calves weighing between 150 and 400 pounds. As a result of the change in calf slaughter mix, calf carcass weights have increased sharply this year, anticipated to average 205 pounds per head compared with 177 pounds last year.

Little change in average calf carcass weight is expected in 1992 as most of the shift in calf slaughter mix likely has occurred.

SHEEP SECTOR:

Lamb and mutton production in 1992 is forecast to be near or slightly above this year. The slaughter level along with expanded exports to Mexico, is likely leading to a smaller flock. Sheep are being exported to Mexico at a record rate this year, the accumulated sheep exports from January through September was 75 percent above last year. The majority of the sheep exports are expected to be mature sheep.

HOG SECTOR:

Fewer But Larger Operations With Hogs

The numbers of operations with hogs continues to decline. The USDA reported 278,040 operations with hogs on December 1, 1990, off 9 percent from the previous year and 58 percent below 10 years ago. Despite the smaller number of operations with hogs, record pork output is forecast in 1992.

Cash receipts less cash expenses for farrow-to-finish operators have been positive since 1986, high returns occurred in 1987 and again in 1990, but have declined in the second half of 1992. Sharply lower cash hog prices are squeezing returns. Total cash expenses and capital replacement costs are expected to remain around \$36 and \$6 per cwt, respectively. But, if weather conditions impact on crop development or grain exports expand sharply in 1992 hog producer's feed costs could increase sharply.

Expansion Continues Unabated

The September Hogs and Pigs report was the third consecutive quarterly report showing expansion. It indicated that both the U.S. total and market hog inventories were 6 percent above a year earlier, with the breeding inventory up 7 percent. The expansion appears to be gaining momentum as the June-August farrows exceeded previously reported June-August farrowing intentions and the first released September-November intentions were revised upward.

Record Pork Production Forecast for 1992

Pork production in 1992 is projected to be 17.2 billion pounds, carcass weight, exceeding the previous record in 1980 of 16.4 billion pounds and 8 percent above 1991. The greatest year-to-year increases are expected to occur during the spring and summer quarters in 1992.

Ample Processing Meat Supply at Low Prices

Very large pork and poultry production in the second-half 1991 has expanded the availability of trimmings and processing meats. As a result, wholesale trimmings and other processing meats prices have been under pressure. Trimmings materials with higher percentages of fat have been particularly depressed. Since many sausage product formulations allow substitutions among trimmings materials, the lower pork trimmings prices and the ample supplies give a strong incentive to expand pork trimmings use. In 1992, the abundant supply of pork processing meats at attractive prices is expected to give increasing competition to processing turkey meats. In recent years, some mixed formula sausage products have expanded the use of turkey meat and displaced pork trimmings. Processing lean beef, mostly from cows, bulls,

and imports will be less directly impacted by the lower priced pork trimmings and poultry processing meats.

RED MEAT TRADE OUTLOOK

Increasing Beef Exports, Decreasing Imports in 1992

U.S. imports of beef and veal rose earlier in 1991 due to tight domestic supplies and relatively high prices. Exchange rates were favorable with most of our principal trading partners. Due to heavy shipments of qualifying meat earlier this year, the U.S. negotiated voluntary restraint agreements with Australia and New Zealand to prevent the trigger level under the Meat Import Law from being hit. Australia and New Zealand, our major suppliers of imported beef voluntarily restraint shipments of meat late this year. Any meat shipped to the U.S. above the agreed upon limits from these two nations would be stored in bonded warehouses and not released until after January 1, 1992. Shipments from Australia and New Zealand in 1991 are to be limited to 743 million pounds and 445 million pounds, product weight, respectively. Because of the voluntary restraint agreement, beef and veal imports for 1991 are expected to be down 2 percent from 1990.

U.S. Beef imports are expected to decline again in 1992, perhaps 1 to 2 percent from 1991.

Beef exports in 1992 are forecast to increase 8 percent above this year, compared with a 14 percent year-to-year increase in 1991. Most of the increase will be to South Korea, Mexico, and Canada. While Japan remains the U.S.'s principal market, other markets are receiving an increasing percentage share of total exports.

Slight Decline in 1992 Cattle Imports from 1991's Record

Cattle imports for 1991 are forecast to be a record 2.2 million head, 2 percent above last year. Next year, cattle imports are expected to be down about 2 percent. The largest number of cattle continues to be shipped into the U.S. from Mexico, and they tend to be mostly light weight feeder steers. However, shipments of cattle from Canada into the United States has shown the greatest year-to-year percentage increase.

Pork Exports and Imports Expected To Increase in 1992

Pork imports in 1992 are expected to be around 865 million pounds, carcass weight, up 3 percent, but still below the imports for 1990 and 1989. Imports this year are forecast to be 840 million pounds, 6 percent below last year. Cumulative imports for January through September 1991 were 12 percent below a year earlier, with imports from both Canada and Denmark off 7 percent and a 65 percent decline from Poland. Next year, pork imports from Canada are expected to increase, unless U.S. pork prices increase or the dollar weakens, little growth is expected for pork shipments to the United States from Denmark or Poland.

Imports of live hogs from Canada are expected to decline for the remainder of the year due to the new duty of Canadian hogs shipped to the United States and low U. S. hog prices.

Price Outlook For 1992

Retail Pork prices Forecast To Decline, Beef About Unchanged

Retail Pork prices are expected to decline in 1992, due to the sharp expansion in pork availability. In 1992, retail pork prices are forecast to average about \$1.90 per pound, 10 percent below 1991. Retail Choice beef prices are expected to be about unchanged in 1992 at about \$2.90 per pound near or slightly below this year.

Choice steer prices for Nebraska Direct, 1100-1300 pounds, are forecast to average \$73-\$79, compared with around \$75 this year. The record high Choice steer prices, in the low \$80's, in late 1990 through early spring 1991 are not expected to be revisited during 1992.

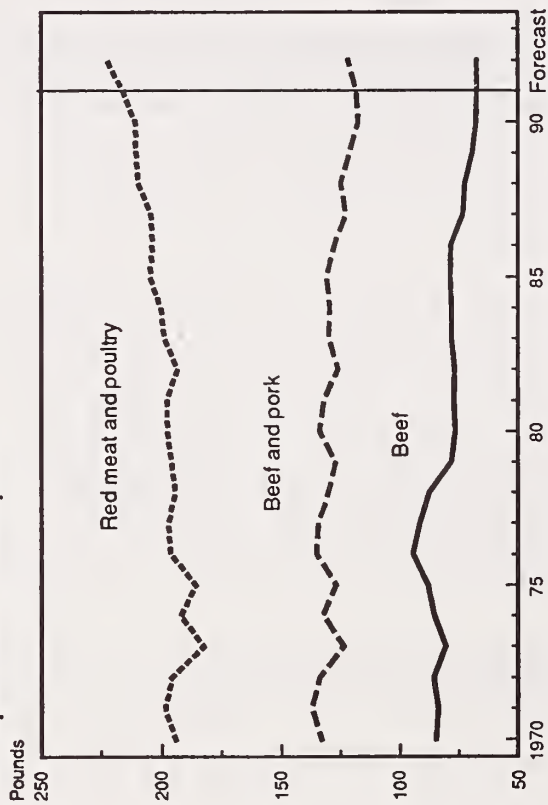
Feeder cattle prices are expected to decline from 1991's record of near \$93 per cwt to average \$86 to \$92 in 1992. Feedlot operators are expected to lower bids for feeder cattle prices to improve cattle feeding margins more than the expectations for higher fed cattle prices.

Utility cow prices in 1992 are expected to be near or below this year's \$50 per cwt average. Beef cow slaughter is expected to rise from cyclical lows this year. Modest increases in cow slaughter, together with large supplies of competing meats, is likely to result in some price decline.

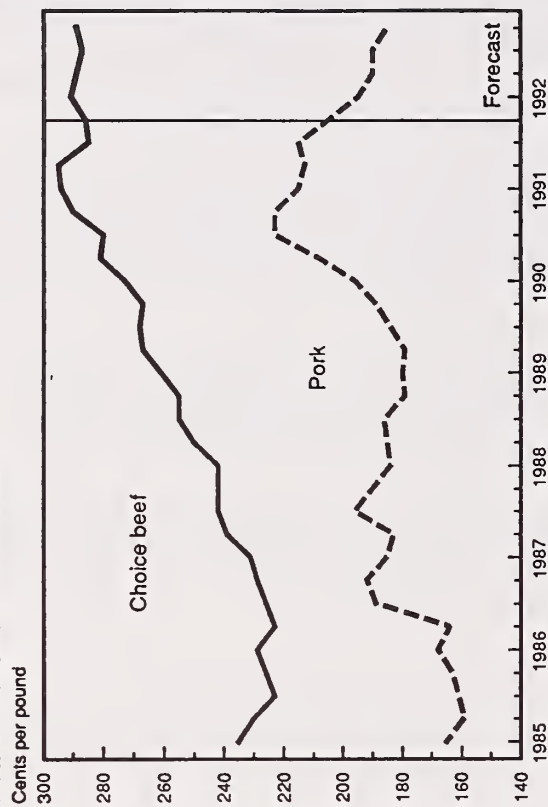
Barrow and gilt prices for 1992 are/ forecast to average \$39-\$45 per cwt compared with around \$49 this year. The lowest hog prices in 1992 are expected during the second half of the year. Lower hog prices in 1992 will likely pinch feeding margins sufficiently to lead to declining pork production in 1993.

Choice Lamb prices at San Angelo, Tex. are expected to average \$49 to \$55 per cwt, compared with around \$50 this year. Lamb prices have declined from the an average near \$67 per cwt as recently as 1989. Lamb is more of a specialty meat and in recent years has been at sharp discount to Choice steer prices.

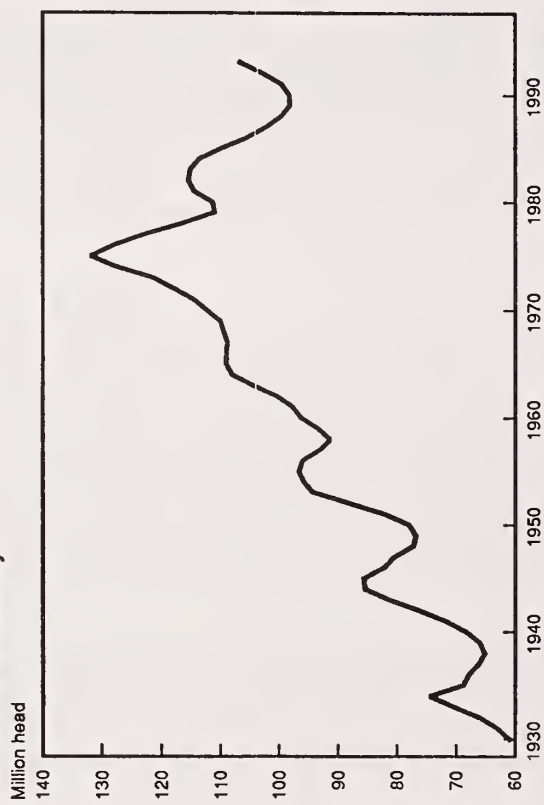
Per Capita Meat Consumption



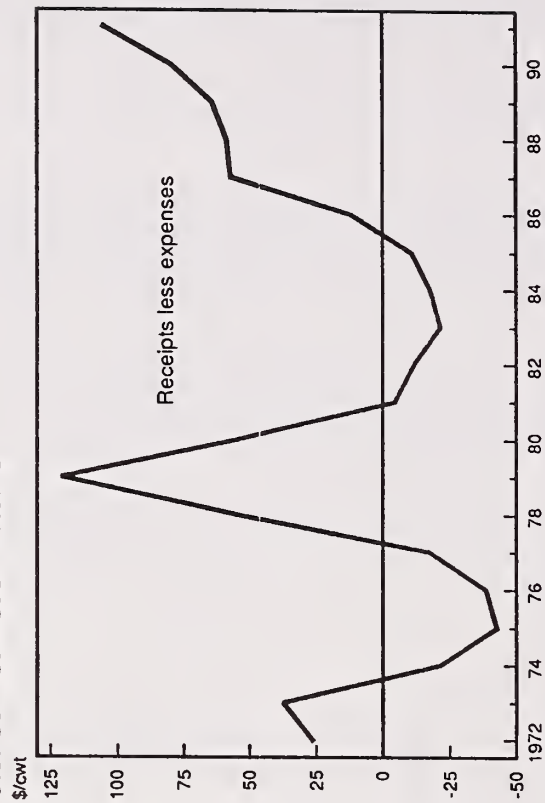
Retail Beef and Pork Prices



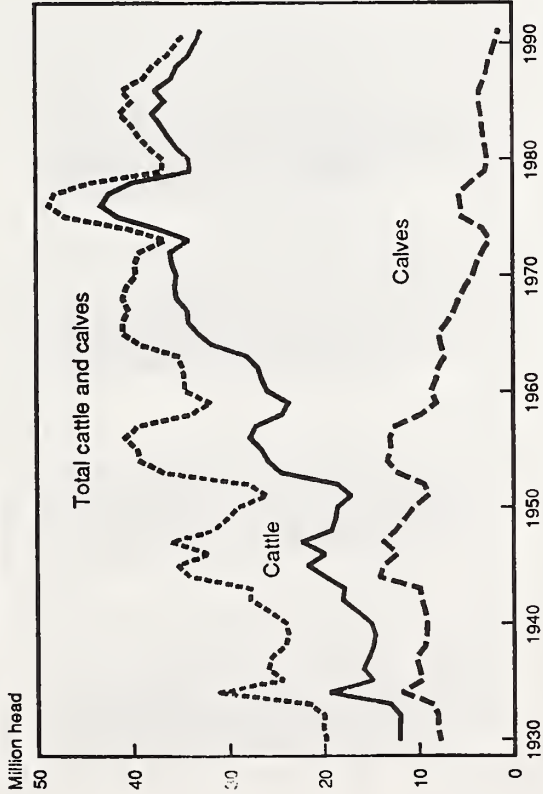
U.S. Cattle Inventory



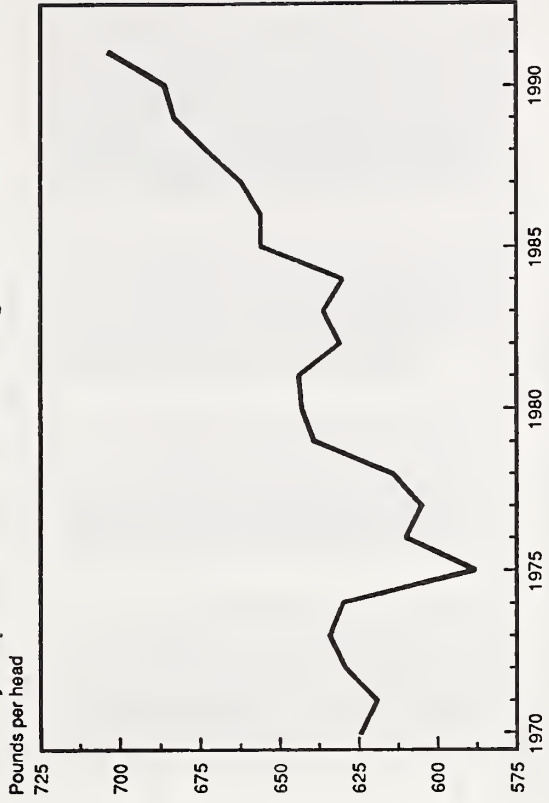
U.S. Cow-Calf Cash Returns



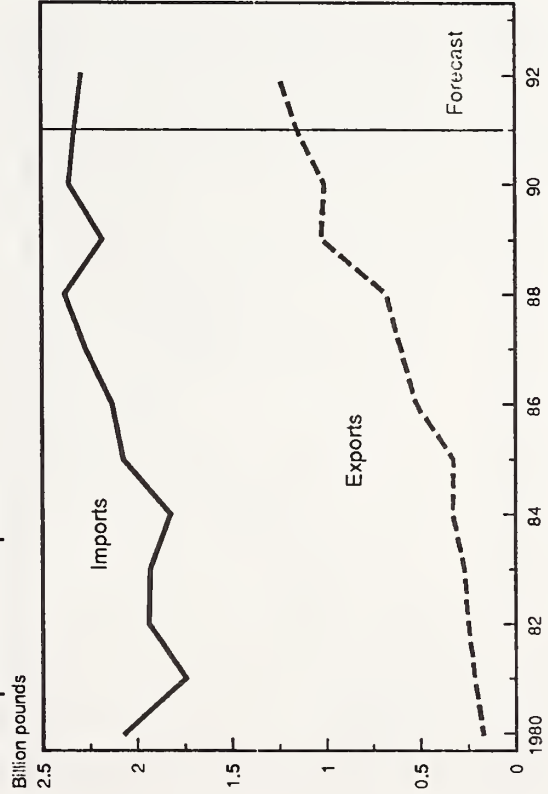
Cattle and Calf Slaughter



Federally Inspected Cattle Carcass Weights



Beef Imports and Exports



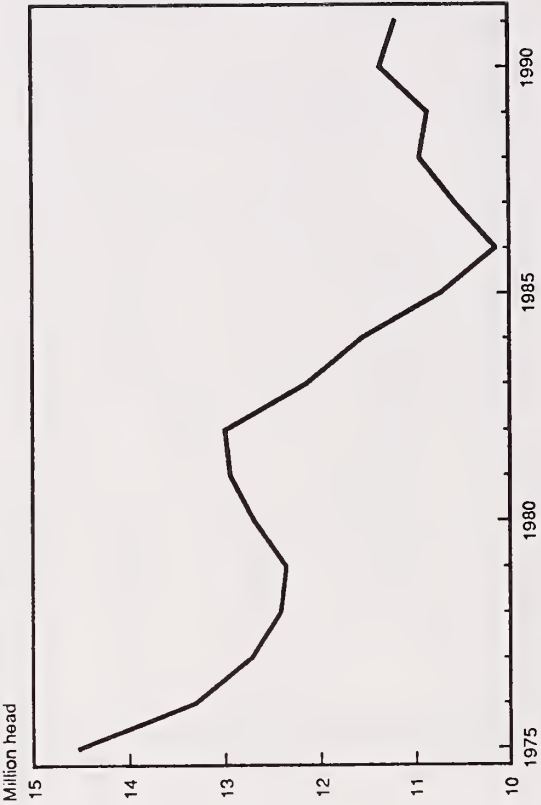
Pork Imports and Exports



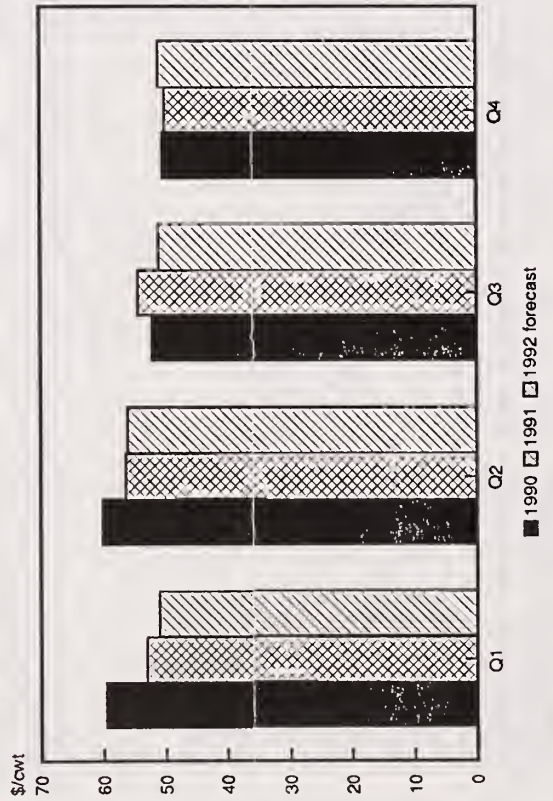
Calf Slaughter



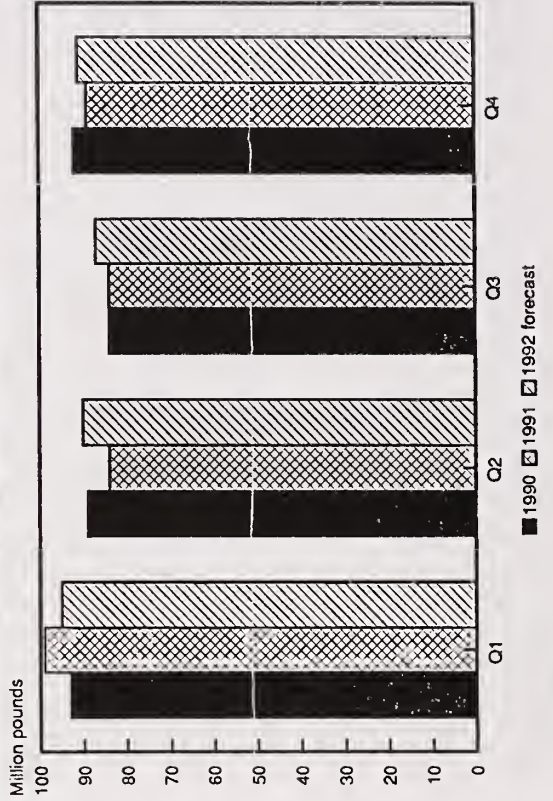
All Sheep Inventory



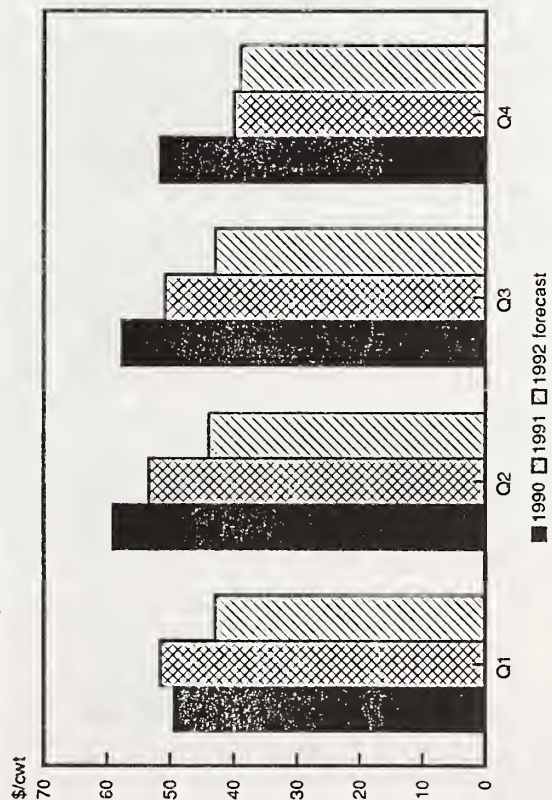
Choice Lamb Prices



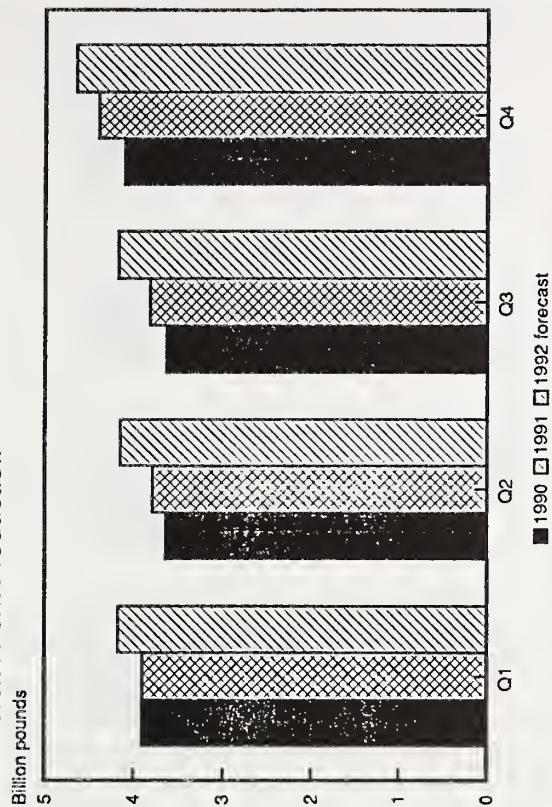
Commercial Lamb and Mutton Production



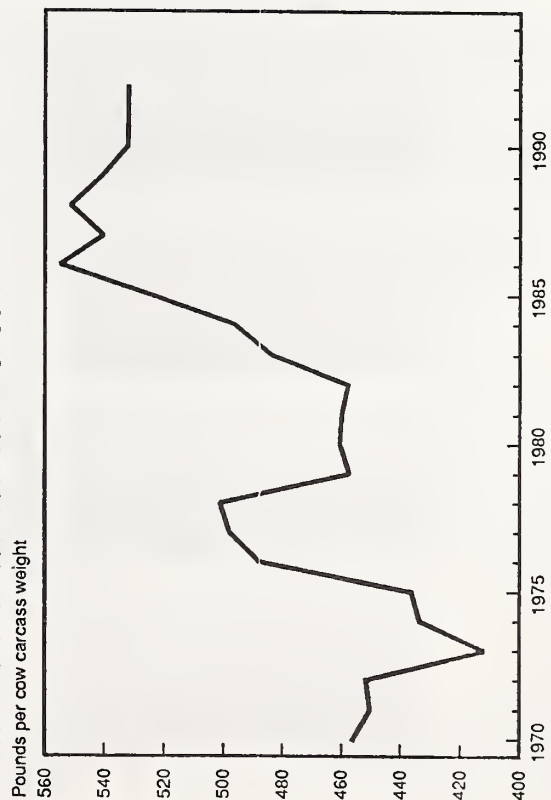
Barrow and Gilt Prices



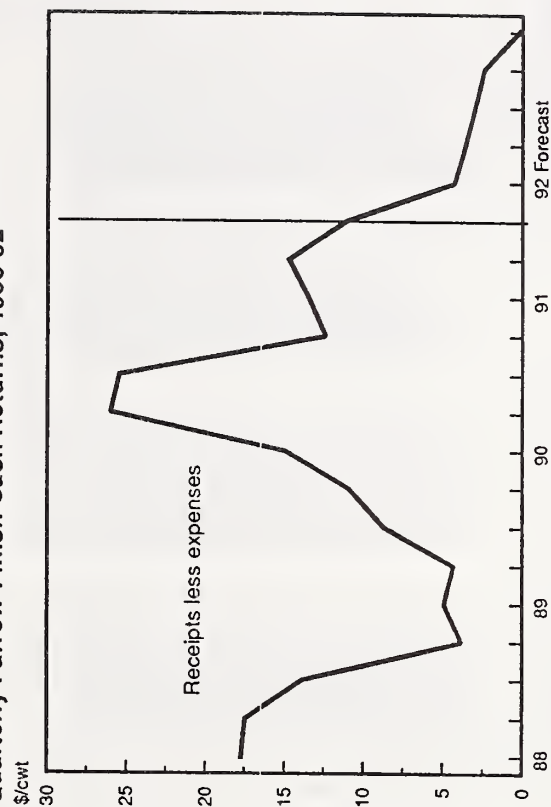
Commercial Pork Production



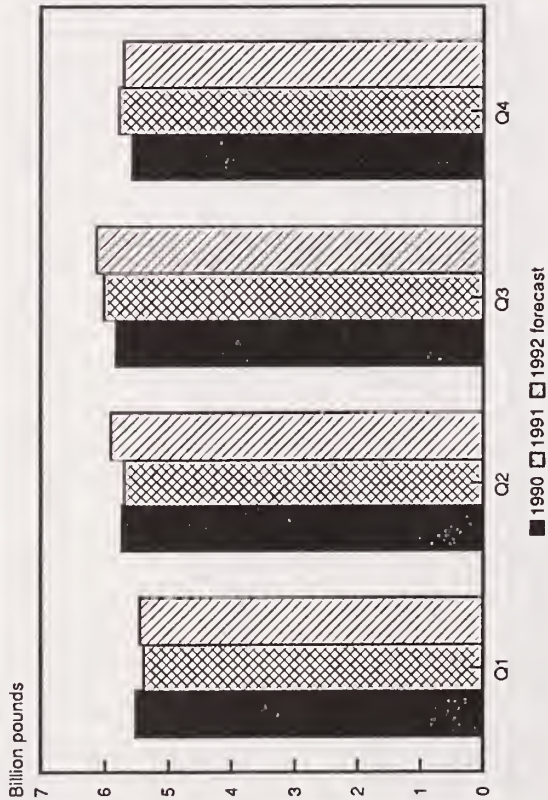
Annual Beef and Veal Production Per Cow



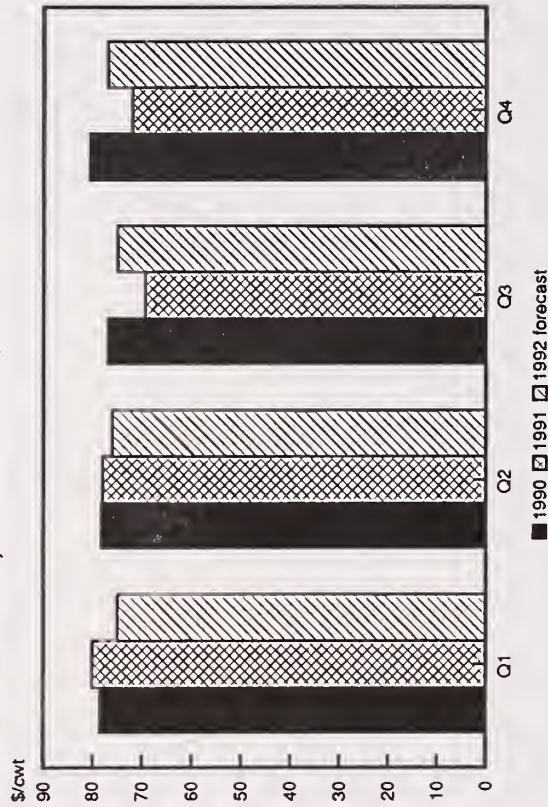
Quarterly Farrow-Finish Cash Returns, 1988-92



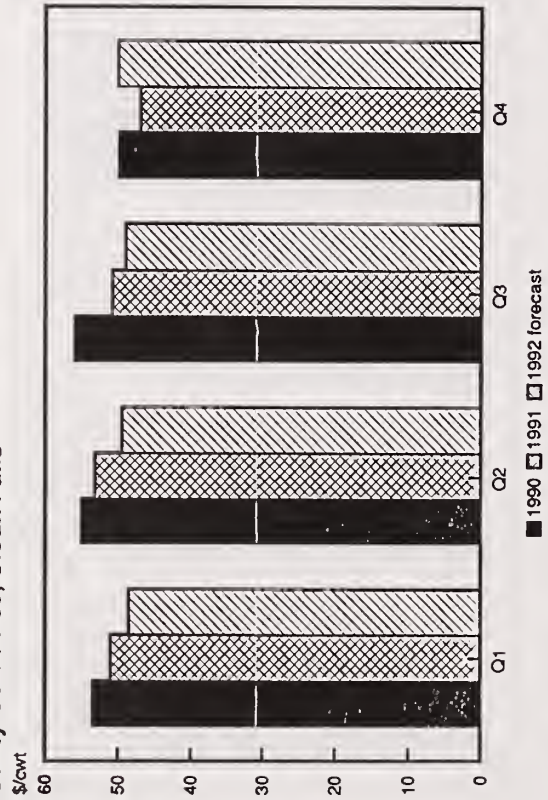
Commercial Beef Production



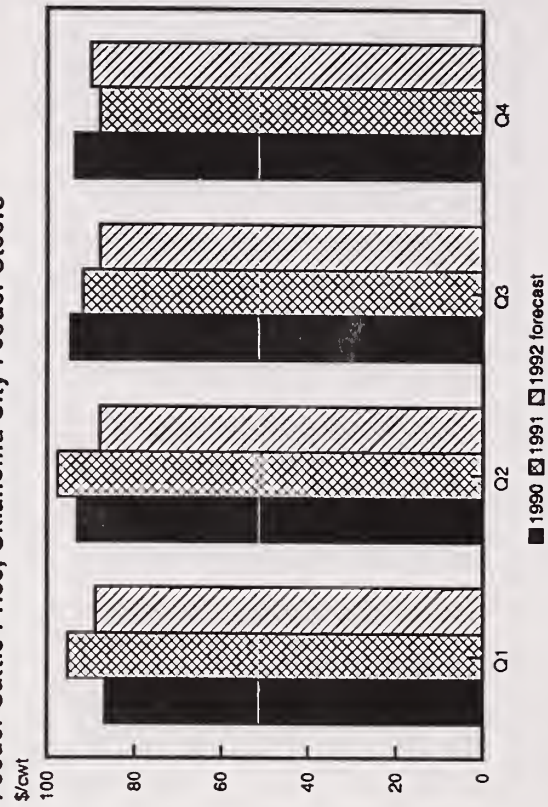
Choice Steer Prices, Nebraska Direct



Utility Cow Price, Sioux Falls



Feeder Cattle Price, Oklahoma City Feeder Steers



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United States Department of Agriculture
Washington, D.C. 20250-3900



Outlook '92

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OUTLOOK FOR POULTRY AND EGGS

Susan E. Buhler

Agricultural Economist, Agricultural Marketing Service, USDA

Introduction

The poultry industries will face challenges in 1992 from record protein supplies and a still-weak economy. Poultry consumption has grown steadily since the 1950's in contrast to red meats which have experience periodic declines. Red meat consumption is forecast to grow by about 4 pounds per capita in 1992, and poultry consumption is expected to increase by about 3 pounds per person. Broiler consumption will reach nearly 77 pounds per person and turkey consumption will approach 20 pounds. Egg consumption continues a long-term decline, and for 1992 total egg consumption is expected to drop by about 1 egg to 231 per person.

Supplies of red meat and poultry will reach new records in 1992 which suggests producer returns may be squeezed. The broiler industry should be in relatively good financial condition because of good to excellent net returns earned in recent years. But turkey producers have not experienced good returns since 1987 and may not fare well as prices drop in a battle for market share. While poultry meat production is expected to continue increasing in the next few years, the rate of growth will moderate as expanding supplies of competing meat add to market strain and depress prices. Relief might be sought through expanding exports.

Fundamental demand factors will improve in 1992 as the economy recovers from recession. Real Gross National Product (GNP) is expected to increase moderately at perhaps 3.4 percent in 1992, compared with a slight decline in 1991. Inflationary pressures are expected to remain under control and will allow further reductions in interest rates in 1992. For the year, the bank prime interest rate is expected to average about 8.5 percent, compared with 10 percent last year. Unemployment is expected to decline to about 6.3 percent from 1991's rate of 6.7 percent. Real disposable income is expected to increase in 1992 by about 2.2 percent, after declining in 1990 and 1991.

Based on current feed cost forecasts, production costs are expected to be higher than a year earlier during the first half of 1992 but lower during the second half. Overall, production costs are likely to average about unchanged for 1992.

Broilers

The broiler industry is continuing to expand after 8 consecutive years of profitability. Output in 1992 is projected to reach about 20.5 billion pounds, 4 percent higher than in 1991. Over time, the broiler industry has continued to increase production until profits were depressed before cutting back expansion. This occurred in 1987 and 1989, when 9-10 percent production increases over year earlier levels in the second half of both years reduced profits before broiler producers cut the rate of expansion. Currently, the industry is putting the brakes on output increases after several years of 7-percent average growth and lower net returns each year. During fourth-quarter 1991 the rate of expansion dropped to 4-5 percent over year earlier levels, half the expansion rate of a year earlier.

Prices

Whole broiler prices in 1992 are expected to average 47-51 cents per pound as increased poultry and red meat production keeps strong pressure on prices (Figure 1). The 7-percent rise in production in 1991 kept whole bird prices generally below year ago levels. However, retail beef and pork prices remained higher than a year earlier during the first half of 1991 and provided some support for broiler prices. Wholesale prices of whole, chill-packed broilers at 12-cities averaged about 51 cents for 1991, below the 55 cents of 1990.

Much of U.S. broiler output is sold in forms other than whole bird. In the parts complex, prices are expected to continue relatively flat into 1992 due in part to ample supplies of alternate meats, especially for fast food use. Breast meat prices were disappointing to producers throughout 1991. Wholesale prices in the Northeast for boneless, skinless breasts averaged about \$1.85 per pound for 1991, lower than the \$2.01 in 1990 and well below 1989's \$2.30. Growth in the fast food industry began slowing in mid-1990, and prices the industry considered depressed dropped even further in 1991.

Elsewhere in the parts complex, prices for drumsticks, leg quarters, and thighs are expected to average below year-earlier levels well into 1992 unless large export sales of dark meat resume. Removing a large quantity of dark meat from the U.S. market is supportive of both parts and whole bird prices. For 1991 leg quarter prices averaged about 29 cents per pound, 2 cents below 1990 but about the same as 1988 and 1989. After strength in 1990 due to strong demand for export to Russia, prices for whole legs and leg quarters returned to more usual relationships to whole bird prices in 1991. Exports to Russia were down nearly 50 percent in 1991 from a year earlier, and dark meat parts have been below year-earlier prices since February 1991 when exports declined.

Net Returns

Broiler production remained profitable in 1991 although at levels lower than the last few years (Figure 2). Barring major changes in feed costs, returns to processors as measured by the Economic Research Service (ERS) for sales of whole birds are expected to average about 3-4 cents per pound in 1992, compared with 5-6 cents in 1991 and 8 cents in 1990. Prices and profits received for the marketing of further processed or value-added broiler products are not directly reflected in net returns estimated by ERS.

Trade

U.S. broiler producers exported about 6 percent of 1991 production, a percentage likely to be matched in 1992 (Figure 3). Total exports for 1991 are estimated at 1.15 billion pounds, fractionally above the record posted in 1990. Much of the 24-percent increase in 1990 was due to the sale of leg quarters to the USSR. While Russian sales fell 50 percent in 1991 due mostly to credit limitations, exports were up in most other markets.

The U.S. industry, plagued with an oversupply of dark meat because of strong consumer preference for white meat, continues to look to the USSR to absorb the surplus and support prices for other poultry items. However, it cannot be assumed that U.S. sales of leg quarters to the USSR will again attain high levels. The USSR is short of hard currency for trade, and most of the sales in 1991 were guaranteed with USDA credit. Unless additional credit guarantees are forthcoming future sales will be limited.

Beyond 1992

During and beyond 1992, integration and concentration in broiler production will continue to increase, and this could impact poultry's profitability. Industry concentration is reaching levels where the decisions of a few firms can greatly affect the entire industry. According to industry publications, one firm now controls 20 to 25 percent of production (weekly RTC basis), and the top four broiler firms account for about 45 percent. Compare this with 1980, when the top four firms produced 23 percent. Attempts to gain market share fuel product and market development which increases demand for poultry.

Broiler prices on a deflated dollar basis have consistently dropped over time, but production has stayed profitable because increased efficiency has lowered costs. There are probably still significant efficiency gains to be made in the broiler industry, in both production and organization. In past years, increases in feed efficiency have been significant but in the future will be relatively less important. Future increases in efficiency will likely come from factors such as marketing, with new product development and export promotion; and processing efficiencies, such as better utilization and marketing of byproducts.

An example of increased processing efficiency is highlighted in a recent survey by the National Broiler Council. The survey indicates that almost 12 percent of wholesome broiler RTC production currently goes to pet food, rendering and other non-human use, while estimates from a 1987 survey showed only 6 percent moved through these channels. About a third is bones--byproduct from deboning and further processing--and other components include skin, necks, backs, and small meat scraps from further processing. While these are included in RTC production numbers, they have no place in human consumption channels. The strong increase between the 1987 and 1989 surveys could be because broiler further processors are utilizing these byproducts more efficiently.

New markets for poultry have been created as supermarkets add takeout and deli cases to take advantage of a growing demand for food requiring little preparation. The supermarket deli sector is expected by food industry analysts to expand more than 6 percent in 1992. Other away from home food purchases such as fast food and other restaurant and food service are expected to increase, but at a slower rate than in the past. According to industry estimates away from home consumption accounts for 30 to 35 percent of RTC broiler production. Growth in fast food use of poultry has been strong. In 1987 about 11 percent of broilers moved through fast food channels. By 1991, fast food outlets accounted for about 25 percent.

Turkeys

Turkey output during 1992 is expected to increase to about 4.8 billion pounds, about 3 percent more than in 1991. Growth in 1991 was about 3 percent, the slowest rate of increase for turkey production since 1984's 1.3 percent.

The turkey forecast for 1992 is more uncertain than usual at this point due to large losses experienced when prices dropped sharply in the fourth quarter of 1991. Prices for whole turkey dropped to well below breakeven, and producers are likely to lose 6 cents per pound on fourth quarter sales and 2 cents for the entire year. While turkey producers have not had good profits since 1986, only once since 1972 have returns in the fourth quarter been strongly negative. Large losses in the fourth quarter are especially difficult for the turkey industry as much of 1991's whole bird production is priced during October and November. Producers sell about 70 million turkeys for Thanksgiving and Christmas according to industry estimates. Much of the frozen whole bird sales made earlier in the year are sold at prices tied to the markets of this period, as are contracts for fresh turkeys.

Record turkey stocks, large increases in red meat production, and continuing increases in turkey and broiler output have combined to undermine fall turkey markets. Producers had expected to enter 1992 with relatively low stocks and good prices, and production plans for the first quarter were already implemented before the market weakened. But the losses of 1991 will alter production plans and growth later in 1992 could be less than the 2-3 percent currently forecast.

Producers appear to have underestimated fall supplies which had been forecast to be below a year ago. But retailers held early 1991 purchases in storage instead of featuring turkey this summer. Fall markets collapsed as buyers needed only moderate additional quantities of turkey. Due to strong competition from other meats, including hams priced 40-plus percent below 1990 levels, fall turkey consumption is expected to remain about the same in 1990 at about 6.5 pounds per person and carryout stocks could approach 1990's record.

Stocks

Cold storage holdings of turkey are expected to enter 1992 at record levels. Stocks of whole turkey could reach 170-180 million pounds, compared with 164 million pounds a year ago. Stocks of other than whole turkey, generally processing meat and parts, will probably enter 1992 slightly below year-earlier at an estimated 138 million pounds.

Prices

Prices for whole turkey are expected to enter 1992 well below breakeven levels and follow typical seasonal patterns, rising gradually to average higher in the second half of the year than in the first (Figure 4). Prices throughout the turkey complex are expected to remain below breakeven until the second half of the year due to seasonally slower demand, record carryover stocks, and large supplies of competing meat. For 1992 the price of Eastern region hen turkeys is forecast to average 57-61 cents per pound, compared with 59-61 cents in 1991.

Supplies and prices of competing meats, especially hams, will have a great impact on whole bird prices for the Easter marketing season. Retail pork prices are expected to be much lower than a year earlier, and both whole hen turkeys and large boneless turkey breast roasts compete with hams for holiday fare.

Prices for whole birds reflect only a small part of turkey sales. Industry sources estimate that 24 percent of the turkeys grown are sold as whole birds for Thanksgiving and Christmas use. An estimated two out of every three pounds of RTC turkey production is consumed in cut up or further processed form. Whole bird prices, such as for Eastern Region hen turkeys, do serve as an indicator for other markets.

Breast meat accounts for 70-80 percent of the whole carcass value, and price changes in breast meat usually approximate those of whole turkey. When whole bird prices are low, deboning and further processing may provide the best returns, especially early in the year when demand for whole birds will not be strong for months. Returns for further processing are usually marginal under these conditions and the only alternative use is storing whole carcass turkey in consumer packaging. For nearly all of 1991 whole bird prices were below year-earlier, and breast meat prices dropped from prices considered low in 1990. Boneless breast meat averaged about \$1.60 per pound in 1991, compared with \$1.67 in 1990 and \$2.08 in 1989. Prices are expected to continue at about the same levels in 1992.

Thigh meat is generally considered a raw material for further processing and for many applications is interchangeable with pork trimmings. As pork prices rise seasonally, turkey thigh meat prices generally go up as well. In 1991 prices averaged \$1.01 per pound, compared with 91 cents in 1990. Exports of thigh meat to Mexico for further processing are expected to continue strong in 1992 and will provide some price support, but increasing pork supplies will provide tough competition and prices will probably average lower.

Net Returns

Returns to processors for whole bird production provide an indicator of industry profitability, although returns for further processing are not directly measured (Figure 5). Returns for 1992 are expected to be strongly negative during the first half of the year, but should recover to slightly profitable levels during the second half. If producers curtail expansion plans from current expectations returns could be higher. Historically, producers reacted to losses by reducing supplies the following year. However, in recent years the industry has continued to expand despite 5 years of poor returns. Since much of the industry growth has been in further-processed products, it is possible that returns for whole bird production are providing a less reliable indicator of response than in the past.

Consumption

Turkey consumption is expected to continue a long-term trend toward a more even distribution throughout the year (Figure 6). Consumption during October-December 1970 accounted for over half of turkey's annual total, but the proportion has been decreasing. Fourth quarter disappearance in 1991 is expected to account for 34 percent of the total.

Trade

Lower prices in 1991 contributed to a 50-percent jump in exports, estimated to reach a record 80 million pounds for the year. Exports played a significant role in some domestic markets, especially for thigh meat. In the last two years increasing quantities of boneless thigh meat have been exported to Mexico for further processing use. Export demand is not constant, and as Mexico moves in and out of the market domestic thigh meat values fluctuate by 10-20 cents per pound.

Beyond 1992

Much of the growth in turkey consumption in recent years has been in further processed products, which is expected to continue. As the industry's structure moves toward more vertical integration, decision making for the industry as a whole may be less conservative than in the past when independent growers accounted for a larger share of the industry. Integrated processors can spread their risks more than can independent growers, and have the opportunity to develop marketing niches.

Eggs

Table egg production is expected to hold steady in 1992 following a 1-percent increase in 1991. Hatching egg production will increase 4-5 percent to maintain broiler expansion, and will contribute to an increase in total egg production of about one-half percent.

The egg industry has experienced an unprecedented 3 years of uninterrupted profitability, which is expected to continue in 1992 if production remains restrained. In 1988 the industry responded to the worst net returns on record by drastically cutting output to better balance supply and demand. Table egg output was cut sharply for about 2 years, resulting in the highest net returns on record. Output began creeping upward almost immediately in response to profits and prices moved lower, but the egg industry has demonstrated uncharacteristic restraint by increasing output less than 1 percent in 1991.

Prices and Net Returns

Prices for New York Large, white cartoned eggs in 1992 are forecast to decline slightly from 1991's 78 cents per dozen, and are expected to average 73-77 cents for the year (Figure 7). Small production increases have eroded prices from the record highs achieved in 1989 and 1990, and increasing supplies of alternate proteins will increase pressure on prices. Cartoned egg production has been profitable for 36 months, an unprecedented string of profits for the egg industry (Figure 8). Given production and price forecasts, producers are likely to average returns of 10 cents per dozen in 1992, down 2 cents from 1991.

Consumption

Although confusion continues about which foods may be good and/or bad for health, Americans continue to reduce consumption of eggs. Consumption of eggs in all forms is forecast to drop by about 1 egg per person in 1992 to 231. Consumers continue to increase use of eggs in further processed forms and shell egg consumption continues to drop. Consumption of eggs in the form of egg products will increase from 57 eggs to 60 per person in 1992, while shell egg consumption will decline from 175 to 171 eggs per person.

Breaking Use

Not many years ago the breaking plants were considered a dumping ground for poor quality or surplus eggs, but now breaking use provides a floor under cartoned egg markets (Figure 9). About 9 percent more eggs were broken under Federal inspection in 1991, and breaking use is forecast to increase another 9 percent in 1992 and will account for an estimated 22 percent of total eggs consumed. Production of egg products is expected to continue to increase at a rapid rate in response to demands for convenience products and concerns about food-borne illness.

Trade

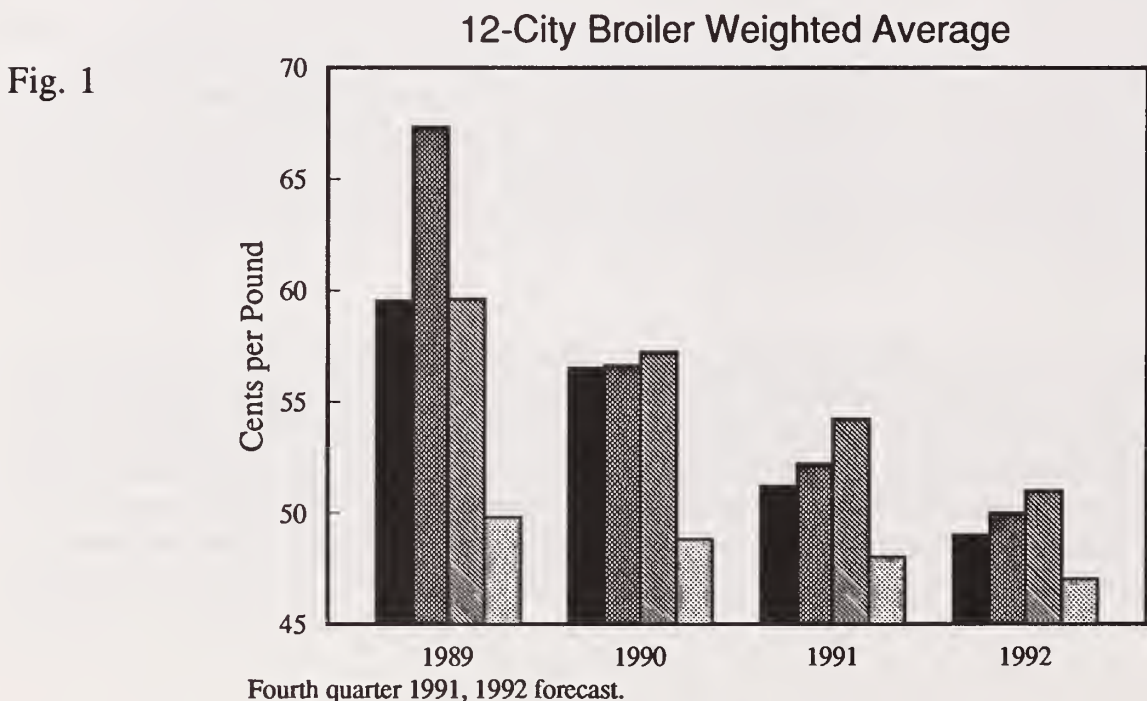
Exports increased substantially in 1991 while imports dropped, both in response to lower domestic prices for shell eggs and egg products. In addition, export of shell eggs increased under the Export Enhancement Program. Imports for 1992 are expected to increase fractionally and exports to decline slightly.

In past years a significant support for late-summer markets has been provided by large exports to Mexico. However, in 1991 Mexico did not import substantial quantities of table eggs as their own production is expanding. Demand in the U.S. is generally slow in late summer but production often increases as producers prepare flocks for the all-important holiday run, and exports to Mexico have in past years provided noticeable support to U.S. prices. It is likely that large exports to this market will not resume for at least several years.

Beyond 1992

Food borne illnesses such as Salmonella enteritidis (Se) will continue to be an issue for the egg industry. Legislation requiring refrigeration of shell eggs at all levels of distribution are being considered, and if adopted could increase costs for some producers. Also under consideration is a requirement to label egg cartons with a reminder to refrigerate eggs.

Declining consumption has prompted the development of new products made from eggs. Products under development include reduced-cholesterol whole egg, microwavable omelets, eggs sterilized in the shell, and extended shelf life ultrapasteurized liquid egg.



Eastern Region Hen Turkeys
Commodity Pack, 8-16 Pounds

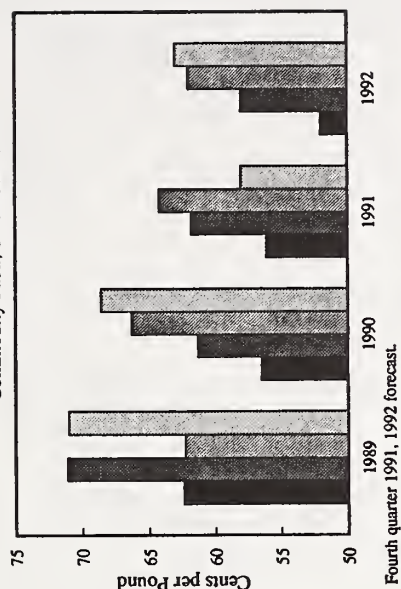


Fig. 4

Broiler Net Returns
Estimated by ERS Method

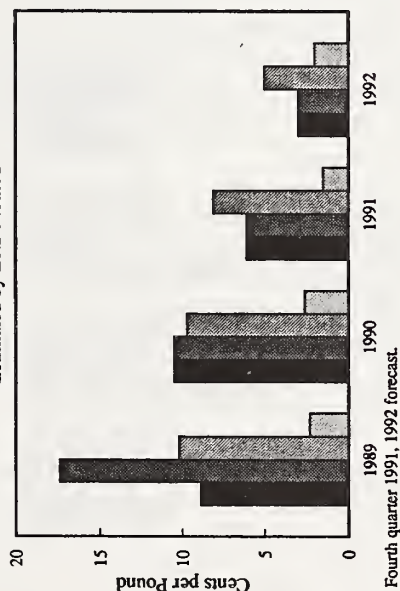


Fig. 2

Turkey Net Returns
Estimated by ERS Method

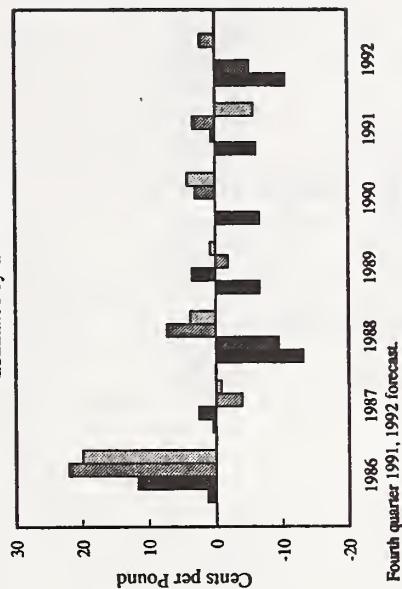


Fig. 5

Broiler Exports

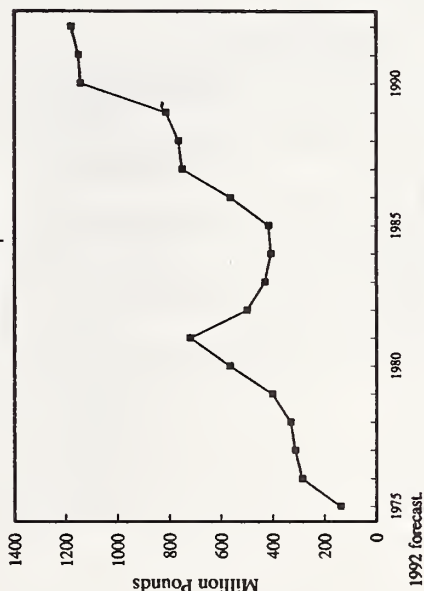


Fig. 3

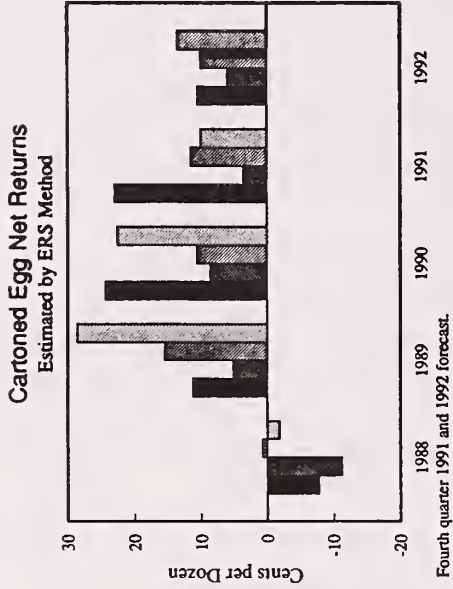


Fig. 8

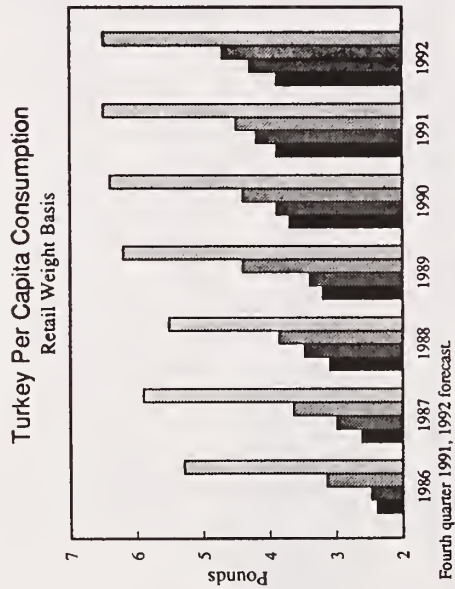


Fig. 6

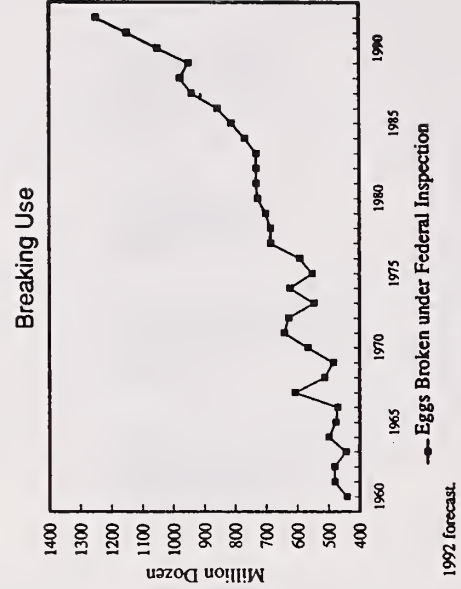


Fig. 9

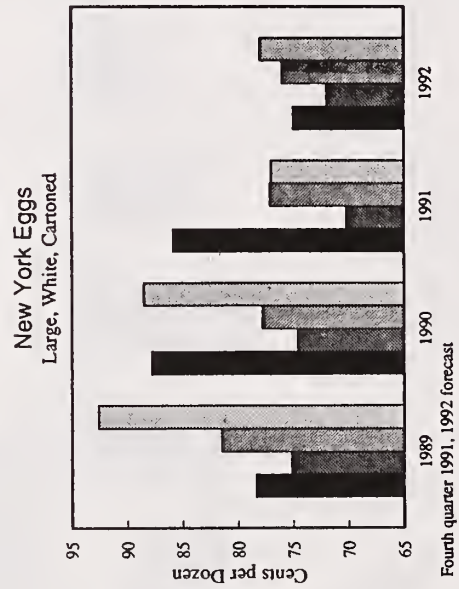


Fig. 7

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THE 1992 FOOD PRICE OUTLOOK

Ralph L. Parlett

Agricultural Economist, Economic Research Service

Food prices in 1991 have increased at a much slower pace than in 1989 and 1990. We will not have final information on the 1991 Consumer Price Index (CPI) until the middle of January. However, we have enough information to say with confidence that the average food CPI for 1991 will be slightly more than 3 percent above 1990. That increase compares with increases of 5.8 percent in each of the previous two years. This year's food price increase will be the lowest since 1986 when the food CPI increased 3.2 percent above the previous year.

In 1992, food prices are likely to be 2 to 4 percent above 1991. This forecast for next year's food prices reflects a continuation of moderate rises in most food categories, very similar to this year. The speed in recovery from the recession is unsure, clouding the general economic picture next year. Nevertheless, larger supplies of some food commodities are expected, pointing to lower commodity prices and only modest gains in the CPI for food next year.

There are three major factors which affect retail food prices. They are: Consumer demand for food, prices of food commodities at the farm level, and the costs of processing and distributing food to consumers. Today, I would like to discuss the influence these factors have had on food prices this year and how they are expected to influence prices in 1992 and beyond. In so doing I will mention some commodity highlights, but only those that will have a significant impact on the food CPI in the coming year.

For those who need more detail, a table at the end of this paper shows the 1992 forecasts for all the major food CPI categories. For more assistance, please feel free to call me at (202) 219-0870.

What role does consumer demand play in determining food prices? Consumer demand has a two part influence--through both prices and income. In the short run, when quantities supplied are essentially fixed, consumer demand plays a dominant role in determining market prices. When the quantity of the good changes, there will be a proportionately greater effect on price in the opposite direction. For example, larger turkey production this year has meant

lower retail turkey prices this holiday season. On the other hand, the white fly infestation in California has reduced lettuce production and retail lettuce prices have increased sharply this fall. For turkey, lettuce, or whatever commodity, it is consumer demand that will largely determine the magnitude of the price change from any given change in production. The price of most individual food commodities are quite sensitive to such short run supply changes with proportionate changes in price being greater than the percentage change in quantity.

Disposable personal income is also an important element of consumer demand for food. When income changes, the quantities purchased by consumers and expenditures change in the same direction. If the general economy is growing at a rate greater than inflation, real disposable personal income goes up. Under these conditions consumer demand has a positive affect on food prices because, with the added income, consumers are willing to purchase more at the same price or pay higher prices for the same quantity. As we have seen this year, during periods of recession, income changes have a depressing effect. Disposable personal income has declined in real terms and the evidence is that consumer expenditures for food have declined from 1990.

During times when real disposable income is declining and consumers must squeeze their budgets, food expenditures often may decline because other expenditure categories such as housing, transportation, and apparel upkeep are more apt to be more inflexible, with less discretion for cuts. In cutting food expenditures, consumers have many choices for substitution. Higher priced foods with added services, such as restaurant meals and already prepared foods, will likely be sacrificed for less expensive and more basic foods, such as those prepared from scratch at home. Since current expectations are for only modest income growth in 1992, this factor may well continue to affect food prices in the coming year.

Farm Level Prices

Farm level prices of food commodities are the most volatile component in retail food prices. As in our demand discussion, farm commodity prices at any point in time are governed by product availability. Available supplies of commodities are subject to farmer's production intentions, favorable and unfavorable weather conditions, disease, pest infestations, and other unplanned events. As a result, supplies could be larger than intended, depressing prices; or smaller than expected, pushing prices higher. Price sensitivity to such changes at the farm level are usually greater than at the retail level as mentioned earlier. The farmer's share of the consumer's dollar varies by commodity and by changes in farm prices. For example, the farmer's share of the retail cost of a loaf of bread is less than 10 percent while the farmer's share for eggs is about 60 percent. As a result, only a fraction of the change in farm prices is passed through to the retail level. In aggregate, however, the farmers share of the retail food dollar averages about 30 percent.

Processing and Distribution Costs

The cost of processing and distributing food are those costs incurred beyond the farm gate and account for about 70 percent of the consumer food dollar. The major inputs in processing and distributing food are labor, packaging, energy, and transportation. Other inputs are advertising, rents, depreciation, taxes, and similar costs of doing business, including profits. Over the past decade, much of the increase in the CPI for food can be attributed to these costs. While changes in these cost factors are not as dramatic as the within-year changes due to supply shocks, the cumulative increases over time are significant. These costs of processing and distributing food are tied to events in the general economy and usually rise about the same as the general inflation rate. But this year the rise is about 6 percent, somewhat higher than the general inflation rate. Even though farm prices are lower this year, the CPI for food will still increase because of this large cost component.

Commodity Highlights

Declines in beef production in 1989 and 1990 and the resulting tight supplies pushed retail beef prices to record high levels. Tight supplies of beef continued into this year along with high prices. Modest increases in beef production in the third quarter brought the first quarterly decline in the CPI for beef since the second quarter of 1986. Beef production in 1992 is expected to be slightly larger than year-earlier levels for most of the year. Retail prices for beef next year are expected to average near, to slightly below, 1991 levels.

Pork production also declined in 1990 causing tight supplies and high prices well into 1991. Larger pork production in the second half of this year has brought retail prices down, most noticeably now, during the holiday season. Pork production in 1992 will continue to expand, resulting in retail prices averaging as much as 12 percent below this year.

Poultry production continued to grow at a 5 percent rate in 1991. With total red meat supplies low and prices high relative to substitute commodities, consumers have added more chicken and turkey to their diets. As a result, retail poultry prices have remained relatively stable this year. Poultry prices, however, have declined in the fourth quarter as red meat supplies increased. In 1992, poultry production will continue to expand, but at a slower rate. With larger supplies of red meats next year, poultry prices will likely average below the levels of 1991.

Meat and poultry purchases account for a large share of consumer food expenditures (about 21 percent), and therefore, have a strong influence on the food CPI. Prices of red meats this year have not increased at the rates they have over the last few years. Poultry prices have averaged lower this year than last. Prices for beef, pork and poultry have been the major factor

keeping the all-food CPI from rising at a faster pace this year. Prices for meats and poultry will likely decline next year, keeping the rate of increase in the all-food CPI even lower than this year.

Retail prices for dairy products this year have also averaged below year earlier levels. Retail dairy prices were particularly high in 1990 following a period of low milk production and strong demand for processed dairy products. Increased milk production and lower farm prices for milk brought about some easing of retail prices early this year. Production has since fallen somewhat and retail prices have been rising, but remaining below last year's highs. Retail dairy prices in 1992 are expected to rise a very modest 1 to 3 percent, reflecting little change in milk production.

Weather had a dramatic impact on fruit and vegetable production in 1991. A hard freeze in California last Christmas severely damaged citrus crops, greatly reducing fresh market orange supplies. The CPI for fresh fruit increased at an annual rate of 78 percent in the first quarter and 26 percent in the second quarter. This further demonstrates the price sensitivity to supply shocks mentioned earlier. As other fruits became more plentiful in the third and fourth quarters prices declined somewhat, but remained well above 1990 prices. Cold damp weather continued on the West coast into the Spring slowing fresh vegetable growth and causing voids in the market pipeline. As a result, prices for fruits and vegetables were much higher than normal in the first and second quarters of 1991. As vegetable supplies reached more normal levels in the third quarter, prices declined. In the fourth quarter, however, vegetable harvest will be slowed due to whitefly infestations and prices for the fall will rise, particularly for lettuce.

In 1992, orange production will still be low due to tree damage suffered during the freeze last year. Domestic fresh orange supplies will be larger than last season but well below the prefreeze levels of 1990. Fresh orange prices will likely remain high through 1992, keeping the fresh fruit CPI about level with 1991. The whitefly situation in Southern California will continue to hamper production through the first quarter of next year. Prices for a number of fresh vegetables will be high and supplies will be short. As the vegetable harvest moves from Southern California in the second quarter, supplies and prices of fresh vegetables will return to more normal levels.

Summary

There is still much debate as to when the recession will end. Those economic signals that have a positive influence on the recovery have been mixed and most analysts believe the recovery process will be slow. Disposable personal income is expected to grow only modestly in 1992 and consumer demand for food will remain lackluster. As a result, general economic conditions will continue to have a depressing affect on food prices, at least through the first half of 1992. Income growth will probably be too little to offset the effect of larger meat supplies in 1992, and red meat prices will average below 1991 levels. Fruit and vegetable prices are expected to remain high. Fresh citrus supplies from California will be larger than last season's freeze damaged crop, but smaller than the prefreeze crops. Fresh vegetable prices

will be influenced by the whitefly infestation in California and lower vegetable acreage in Florida and Mexico. Prices for most other foods will rise modestly at a rate below the general inflation rate. The increase in the food CPI in 1992 over 1991 is expected to be 2 to 4 percent.

Changes in Food Price Indicators, 1988 through 1991

	1989	1990	---Forecast---	
			1991	1992
Consumer Price Indexes			Percent	
Food	5.8	5.8	3.2	2 to 4
Food away from home	4.6	4.7	3.7	3 to 5
Food at home	6.5	6.5	2.9	1 to 3
Meat, poultry, and fish	5.0	7.3	2.3	-3 to 0
Meats	4.0	10.1	3.3	-3 to 0
Beef and veal	6.4	8.0	3.2	-1 to 1
Pork	0.6	14.7	3.2	-10 to -7
Other meats	2.8	9.3	3.7	-2 to 1
Poultry	9.9	-0.2	-1.0	-3 to 0
Fish and seafood	4.5	2.2	0.9	0 to 3
Eggs	26.6	4.7	-2.1	-7 to -4
Dairy products	6.6	9.4	-1.2	1 to 3
Fats and oils	7.2	4.2	4.7	1 to 3
Fruits and vegetables	8.5	8.0	5.4	0 to 3
Fresh fruits	6.6	12.1	13.3	-1 to 3
Fresh vegetables	10.7	5.6	4.6	0 to 3
Processed fruits & vegetables	6.3	6.2	-1.6	1 to 3
Processed fruits	3.2	8.7	-3.5	1 to 3
Processed vegetables	10.7	2.7	1.1	2 to 4
Sugar and sweets	4.7	4.4	3.7	4 to 6
Cereals and bakery products	8.4	5.7	4.3	4 to 6
Nonalcoholic beverages	3.5	2.0	0.6	0 to 2
Other prepared foods	6.4	4.5	4.8	3 to 5

Source of historical data: Bureau of Labor Statistics; forecasts by Economic Research Service.

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STATE OF THE SUPERMARKET INDUSTRY

Tim Hammonds
Senior Vice President
Food Marketing Institute
Washington, D.C.

This year the FMI Board of Directors assembled a Board level committee to look at the 1990s. It was headed by Bob Bartels who runs Martin's Supermarkets in South Bend. This committee looked at the data FMI collects on the industry, talked about the trends for the '90s, and put together a resource guide that your company can use in your own strategic planning process. Most of the slides that I will use this morning are captured in that book, available from our publications department (tel. 202-429-8444). Bob Bartels' blue-ribbon committee identified five key trends they thought particularly important for our industry.

The first is consumer demographics and lifestyles. The second, industry structure and competition. Third, the role of technology in the future of our industry; fourth, human resources and labor issues; and then, finally, environmental issues for the 1990s.

The text in the front of this strategic planning guide walks through each of these as I will do for you this morning. But since this guide is intended to be used in-house with your own management team to reach your own conclusions as to what these trends mean in your market, what I will do this morning is to give you my own interpretation of where I think these five key issues are taking us in the '90s. This interpretation is not contained in the guide.

My message is that what's going on in the '90s is not just another turn of the wheel of retailing, not just another swing of the pendulum. You hear this a lot: the pendulum is going to swing back, today's trends are just another turn of the wheel of retailing. Maybe the subtitle for my talk is "The Wheel of Retailing Develops a Flat."

What we're doing is literally reinventing the supermarket industry, and we're reinventing it from quite a different point of view than has traditionally been the case. Many of the truly innovative players today come from a department store background, not a grocery background. So what I want to leave you with is the notion of: America, European Style. My feeling is that the American supermarket industry at the end of the '90s is going to look a lot more like the European industry than it does today. I'll give you five specific reasons why I think this is going to be the case.

Consumer Lifestyle and Demographics

We begin with the consumer because this is the basic driving force in our industry. We are consumer driven as perhaps no other industry. The issue here is the consumer that this industry was invented to serve; that is, the housewife who does not work outside the home, is increasingly disappearing. If you look at the major demographic and lifestyle forces shaping today's consumer, there are four that we think are particularly important.

First, by the year 2000 one-quarter of all Americans are going to be black, Hispanic, or Asian. In fact, if you add other ethnic groups, the total is closer to one-third of all Americans. And the newcomers today are not Europeans, as they traditionally have been. Newcomers to America are, in order, from the Philippines, Vietnam, Mexico, China, and Korea. This leads to a very different pattern of eating, cooking, and holidays, than we typically have seen.

Also, (our second trend) in the marketplace today the fastest-growing age groups are the older age groups, those 45 to 54, and those over 85. By the year 2000 -- those of you in this group in the audience, think about this -- by the year 2000 the entire baby boom generation is going to be middle-aged. This older population will be the most mobile, best-educated, healthiest, highest-income group of older shoppers America has ever seen.

As these people begin to shop in our stores it's important not to stereotype what we think older shoppers are going to be like. These people are bringing with them a very different set of shopping habits and attitudes toward food and food's role in health in their lifestyle. Older shoppers will also be reinventing our industry.

The third trend: smaller households. One-quarter of all households in 1989 are already one-person households and, the fastest household group is single parent households. So it's no surprise that one-stop shopping continues to be so important for everyone.

And finally, obviously, as all of you will already know, working women are now the norm in America. Within five years, 80 percent of all women 25 to 44 years of age will be working outside the home. Eighty percent. Again, tremendous pressure on time for shopping.

All of this, I think, means that the idea of America being a melting pot has disappeared. America isn't a melting pot any more, it's more a mosaic of different lifestyles and ethnic groups. The groups coming to America today keep their own language (at least as a strong second language if not their first language) and they keep their own cooking and eating patterns. And something else is happening, too. Cooking and eating patterns move very quickly outside these new ethnic groups themselves throughout the United States. Almost every city in the United States now has Thai restaurants, Vietnamese restaurants, and fruits and vegetables in supermarkets that you would never have seen outside of the Pacific Rim or Mexico just a few years ago.

In polling these new shoppers, when we ask them, "What's important when you pick your store," quality produce is still tops. This is followed closely by good variety and wide selection (that's the one-stop shopping that we were just talking about) and good low prices. We found, two years ago, that low prices begin to rise on the list of things people felt important when they picked their supermarket. We flagged for the industry two Januaries ago the fact that we thought a recession was underway. As the recession did arrive, low prices continued to be very important for shoppers.

But the problem for our industry is that as low prices become more and more important, the way shoppers feel about supermarkets in providing good low prices is declining. In 1989, 71 percent of the people said they thought supermarkets did a good to excellent job in providing good low prices for them. As the recession began to arrive, this declined to 66 percent in 1990, and another 1 percent point decline in 1991. So at the very time prices are getting more important to shoppers, they feel supermarkets are doing a poorer job in providing low prices. The industry needs to find a way to tell that message, and your workshops will key on this today.

For us, the frustrating thing is that even with the reality that the supermarket is often the low price supplier, we haven't been able to communicate that image forcefully enough. We need to pay a lot of attention to this because it opens opportunities for other classes of trade.

Because we survey customers, I'm always asked, "What about the issues of the '80s: Nutrition, convenience, the environment? Have these gone away during the recession? Were they a flash in the pan or are they issues for the '90s?" I think the verdict is in. Our surveys of the shopping public this year tell us that the interest in nutrition, convenience products, and environmental issues still remain strong. We think these are indeed issues for the '90s.

But let's not over-emphasize them. When we ask people the importance of factors in selecting an individual product, we find it still has to taste good before they're going to buy it. So yes, nutrition is important, food safety is important, but taste is still number one.

There's an opportunity here as people find their budgets squeezed. The bad news is they feel supermarkets aren't doing as good a job as they could in providing low prices. But the good news is, the number one thing they have started to do recently is eat away from home less often. Almost a quarter of the people this January said they had already started to eat out less often and half the people in the marketplace said they're doing it now. This is a tremendous opportunity for us in the supermarket industry. With good microwave products, and with high quality carry-out foods, and excellent deli's, we have an opportunity, I think, to capture these customers, even as the economy improves, to stay with the supermarket for carry-out foods.

Store Operations

As we look at how people shop, we also look at the kinds of stores our members are building. Last year, our members built stores ranging from 8,000 square feet to 85,000 square feet, but the average was 38,000 square feet. During the '80s we built stores larger and larger and larger every year. In the '90s now we're seeing store size stabilize. People have begun to discover what size store they want to run. And in this process, something very important is happening. That is, the industry is Densifying Up.

We've learned that these tremendously large stores have concepts that can be executed in a smaller size. Our members are finding that they can pull 10,000 to 15,000 square feet out of the larger store formats of the '80s into the store format of the '90s, and not sacrifice anything on variety. Those of you who haven't looked at the new merchandising techniques, the new equipment and fixtures that are available to serve this trend toward densifying up, I think, have an area that you can identify as one that's important for you to investigate.

In talking about size, it's hard to talk averages. I said 38,000 was the average in total, but by format the average conventional is about 25,000 square feet, the average warehouse store about 41,000 square feet, the average super store about 43,000, and the average combo about 59,000 square feet. People are beginning to settle in, by format, on what they think is the right size of store.

While this is happening, we found the average opening cost in 1990 was \$3.8 million for that mythical, typical 38,000 square foot store. This brings me to what I would flag as the first of my five key points about America, European Style: Declining Capital Availability. It's tougher to find traditional sources of capital now and this does not look to be getting better any time soon. Developer funding has almost dried up. Most of our members on the wholesaler side tell me that they used to be able to put operators into stores if they came in with good backgrounds, (skill at running an operation) and around \$20,000 in cash. Today, operators with the same level of skill needs to come in with about \$400,000 in cash. This has driven a lot of independent operators to the wholesaler not as the lender of last resort, but the lender of only resort.

The meaning of all of this is, I think, that we're hard pressed to find the volume of good, entry-level, start-up operators in the supermarket business who can get in with little or no cash. In Europe, it's much more typical that the small operators can't really get started with one supermarket. The reason there is primarily site restrictions by the government. But here, we've had an industry that has been very easy to enter for the small operator. I think in the '90s we're in danger of seeing this pace of entry come to a serious slowdown.

Let's look now at what happens when we do build stores. We typically pull the produce department out of the back of the store and put it right up front as the major image department. We feature service items, such as the in-store bakery, service meat (during remodels most of our operators are adding service meat to their self-service counter) delicatessens, and carry-out foods.

And then, with an aging population, we will see great expansion in health and beauty care items, in over-the-counter prescription items, in general merchandise items, and very obviously if you've visited stores recently, pharmacies. Our industry already fills 16 percent of all prescriptions in the United States, and the growth rate here is three to four times the drugstore growth rate. When you do have a pharmacy in a supermarket, health and beauty care item sales are triple the sales volume in the same kind of store without a pharmacy. For the whole over-the-counter and HBC product area, we know that shoppers like to have a pharmacist there that they can talk to. They like the image of a pharmacist in the store for comfort because if they do have questions, there's someone they can talk to.

New Products and Promotions

As we have added new service departments, the dry grocery department has been stable in the face of an absolute explosion in new product introductions. Prior to 1981, in this industry we were introducing about 2,000 to 2,500 new products every year. In 1981 the trend line started to turn straight up. We're now over 13,000 new product introductions every year. This places tremendous pressure on supermarket operators.

Also, in trying to sell this explosion of new products it's important to realize that manufacturers have changed their marketing mix. In 1975, 60 percent of this spending went to advertising -- radio, television and newspaper advertising. Sixty percent to advertising in 1975, 40 percent to various kinds of promotions. In 1990, it was 67 percent in various kinds of promotions and only 33 percent in various kinds of advertising. And that, I think, is part of what's driving the second point I would make to you about America, European Style, the New Marketing Mix.

Why are manufacturers changing the allocation of their promotional dollars so dramatically? It's precisely because of those demographic and ethnic trends in the consumer market that we talked about at the beginning of the presentation. America has fragmented into that mosaic of very different ethnic, lifestyle and demographic groups, market-by-market. It's tougher to reach fragmented consumers with national media advertising. But if you don't know exactly where to reach them with advertising, you do know that you can reach them in the store. So there has been more spending directed toward coupons and more spending on in-store promotions. That's why the mix has shifted. What does this do? It transfers some power to the supermarket operator. In Europe, the balance of power is much more with the retailer-wholesaler group and much less with the manufacturer than has been the case here. This trend, flowing from a fragmenting consumer marketplace, is going to shift the balance of power in the U.S. to look more like the way it looks in Europe. That is, closer to parity with the manufacturer.

But also, this heavy trade promotion spending raises a competitive class of trade issue. Our newest competitive classes of trade are nontraditional grocery outlets that can literally sell cars and cereal in the same aisle. It's important not to stereotype these new kinds of outlets. The discount warehouse clubs, for example, are now at least second generation in most markets. They're not only for downscale shoppers, they're not only for business shoppers. It's typical to drive into the parking lot of a warehouse club in a very poor location of town and park between a Mercades and a BMW. These same shoppers may shop at a club store one day, at a gourmet specialty store the next day.

Club stores are not always in second-use locations any more. They're beginning to find locations that are more and more well situated from the shopper's point of view. And these kinds of outlets are not just secondary outlets any more. Our consumer research shows that, for some of the shoppers in the market, warehouse clubs are their primary grocery store. The world is indeed changing.

This change isn't just another turn of the wheel of retailing. That is, the membership club isn't just another warehouse store that will start adding perishables and will look like a supermarket very soon. This is a new kind of operation that is literally reinventing the supermarket business. The warehouse club store itself is the tip of a logistics iceberg. The logistics to support this kind of operation are perhaps the most important part of what you need to understand to know how these stores work and why they're working. They are serious competition for the supermarket industry.

I think it's time for supermarket operators to say, "These are not just competitors that we need to learn to compete against. They're not just the enemy." They are part of our industry now, and one of the questions our people need to ask is: "What can we learn from these new kinds of retail outlets? What are they doing well that we can bring into the traditional supermarket industry?"

In 1991, there were 500 warehouse club stores in the United States and they were doing \$28 billion in sales volume. That's doubled in the last four years. To give you a perspective, this volume is already roughly equal to the convenience store industry in total, minus gasoline: and 60 percent of the items they're selling are also items that move through supermarkets. But so much of what they sell flows to restaurants and food service (even catering trucks), that they are truly the silent killers of our industry. They take volume from such a wide area that often it isn't noticed by any one store, therefore the term "silent killer."

Think about what happened to the department store industry in the '80s. In the '80s the department store industry was picked apart by the category killers -- Toys R Us, Home Depot, Staples, Crown Books -- you could name a whole series of others. But just the opposite was happening in the supermarket industry. Because of the pressure for one-stop shopping, we were bringing into the store GM/HBC, floral, cosmetics, cards and books, crafts, DIY, housewares, toys, video, pharmacy. We were pulling more and more under

one roof. So supermarkets were running counter to the department store industry trend. It may very well be that the dry grocery section of the supermarket is how vulnerable to the category killers in the same way that the department industry was vulnerable. Whether it is or isn't, these new discount competitors are going to take grocery margins down. The surviving supermarket operators today, I think, need a very aggressive GM/HBC program and they need a very aggressive perishables program.

These new non-traditional competitors make the GMA class of trade Fairness Statement more important today than when it was originally written. In this regard, let me give voice to an impression widely held by food retailers and wholesalers. That is the feeling that manufacturers are incrementally pricing these new classes of trade.

As manufacturers apply a DPP analysis to these nontraditional outlets, there is also a feeling that their analysis lacks a full recognition of the fact that supermarkets are carrying a complete line of manufacturer products week-in and week-out. The new outlets, particularly the warehouse clubs, typically offer a very large volume of just one stock-keeping unit that's in and out for a single week. If that is a successful strategy, manufacturers are in the process of training customers to get used to dramatically reduced variety in the stores. If this is successful, it creates a powerful disincentive for supermarkets to carry a full line of products and I think it won't be long before the supermarket industry decides, in some categories, to dramatically reduce the assortment available.

Sales Growth

Manufacturers feel there is incremental growth in these new classes of trade and that may be why in some categories, some manufacturers are incremental pricing. Our feeling is that there is no true incremental growth because what comes out of one class of trade today takes volume from another class of trade.

Population growth in the '80s was nine-tenths of a percent a year; in the '90s, seven-tenths of a percent a year. The slowest population growth rate since the '30s. The implication is that total sales volume growth is hard to come by. All companies in our 1990 survey showed an average 5.3 percent sales increase in current dollars but adjusted for inflation, a 1.1 percent decline, and that's the good news. For comparable stores (or identical stores), the sales increase in dollar volume was only 3.7 percent, a 2.6 percent decline in real terms.

When we looked at how this was distributed, we found fully 16 percent of FMI member companies had negative sales growth even in current dollar terms. But the really interesting thing is that, by contrast, over a quarter of our members had current dollar sales gains of 10 percent or above. Some operators are finding ways to get sales growth out of a very, very tough market.

In trying to cope with the new marketplace realities, more and more of our members are turning to marketing alliances of various kinds with manufacturers. This is my next point on America, European Style: the New Marketing Alliances. These marketing alliances produce very positive logistics changes. They can generate real efficiencies. But in doing that, they produce a unique product or service that leads to a much more European style of bargaining.

At least in the beginning, these marketing alliances are big player games. There are only so many companies you can partner with. Not everybody can play this game. So, for many who are not part of a marketing alliance, the answer is my next point for America European Style: Upscale Private Label Revisited. Also a very European phenomenon. After all, if there are logistics efficiencies to be had, might not it be easier to drive these through your private label partner than with a manufacturer.

Also, this may be a very rational response to manufacturer in and out dealing with some of the new classes of trade that trains the consumer to be less brand loyal. If you're going to pull down the assortment in the supermarket, one of those products that's likely to survive is upscale private label. By "upscale," I mean private label that really is competitive with national brands. Now, this is another issue that you hear about as a pendulum: that is private label comes and goes. I think the private label in the '90s is a different kind of animal that isn't going to come and go the way perhaps generics would come and go. This is a new way of marketing in the supermarket environment of the '90s that is not going to be simply another cycle in what we've all been used to. For many of our operators, upscale private label has become their frequent shopper program, a way to build loyalty for the store.

Technology

All of these new marketing alliances, because they do drive new logistics and require new data sharing, require new technology. And this is one of those issues the Bartels' committee flagged for us. The point here is the technology this industry was invented with is increasingly obsolete. Tomorrow's technology is very different than today's technology. What you see happening in the marketplace is tremendous experimentation, from the merely exotic to truly Star Wars technology. The important thing to realize as you look at forms of new technology in the supermarket, is that you can't judge the technology of the '90s by what you see in any one or two stores right now. Most of what you see in new technology at the store level is truly experimentation. Look at it this way: Somebody is going to figure out how to get it right. So don't look at an experiment that doesn't appear to be really clicking in the marketplace and say, "That's not important." Think to yourself, "What's the second, third or fourth generation of that technology going to look like?"

Here's a picture (slide) of a checkerless checkout. You may or may not think this is ever going to work. It is a continuing experiment and I think an illustration of how far technology can go, at least in concept. There are other pieces of technology that are perhaps growing more quickly. Here's a video cart in the store. It gives the customer information, perhaps has a store directory, perhaps has a calculator on it, but, by the way, also runs ads as you go down the aisle. You also increasingly see electronic shelf tags as shown on this slide tied into the store computer so there's never a difference between what the scanner thinks the price is, and what the shelf thinks the price is. And these also, by the way, can display advertising messages, as well.

Historically our technology has been focused on operations and cost reduction. One very important thing is happening in the nature of technology and that is we're changing our notion of technology from primarily cost control (back room applications) to bringing it right out front as sales enhancing applications in the store through things like frequent shopper programs, electronic advertising, and electronic coupons. Again, someone's going to figure out how to get these right. The point is, technology today is being used where the customer can see it in ways that will build sales and provide effective marketing in the store. An important strategic weapon of the '90s is going to be technology.

We said earlier the manufacturers are shifting advertising dollars away from general media, spending more on trade promotions. I think many manufacturers have concluded now that the way they are spending promotion money against the store is not as effective as it could be. In my view, that doesn't mean the pendulum is going to swing back to advertising. In my view, that means manufacturers increasingly will find ways, in cooperation with the retailers, to do effective in-store electronic marketing.

I would also say to you that scanning of coupons is already growing very quickly. There are now about 2,500 stores in the United States that are scanning coupons. Some chains already have all of their stores scanning coupons. Many of that group of 2500 stores are experiments for their company. These experiments are working well and will be rolled through the companies very quickly.

Well, that's a quick run-through of what's happening in technology. Let's look at another one of those Bartels' committee issues, and that is human resources.

Human Resources

The primary problem is that the employee that the supermarket industry was built with is increasingly unavailable to us. This is going to get worse. We needed three million employees this year and we think that by 1999 we're going to need 3.6 million. Reason? We're adding more service departments. More and more our industry is a people intensive industry. The real problem with this is that the supply of entry-level people, 18 to 29 year olds, is declining. It's going to go down by another 10 percent by 1995. And of the new entrants to the 1990s workplace, only 15 percent, are going to be native-born white males. Fifteen percent. That's a dramatic difference.

That 15 percent of native-born white males can be added to 14 percent of men who are immigrants, and 7 percent native-born non-white for 36 percent of the new labor force entrants in the '90s who will be men. That means that 64 percent will be women of all nationalities. This creates dramatically different recruiting, supervision, and management needs for this in the industry. Diversity in the workplace is already with us.

For many of our operators, the labor shortage means recruiting senior citizens -- almost all of our operators are doing that, and in addition, have very aggressive campaigns to recruit the developmentally disabled and the physically disabled. And you know what? Our members that have been doing this, recruiting the developmentally and physically disabled, have come back to us almost universally and said, "I don't know why we didn't do this 20 years ago. It works." They're super employees and it's great community relations." This has been a real success story of our industry that is going to continue to grow.

The government too plays a very distinct role in the human resources area. The problem here is that Congress is out of money, but Congress isn't out of ideas. Right now their idea is to generate a flood of new programs that you pay for. Benefit costs in the '80s -- fringe benefits, health benefits -- grew five times as fast as wages, most of that driven by government mandated programs.

Environmental Issues

Let's talk a little bit about the environment in the 1990s. The fifth of the Bartels' Committee Trends. This is an issue that is still with us. It's one I think the industry is dealing with very constructively, but I think it's also an issue that we need to realize is not a flash in the pan. It isn't going to go away in the '90s. There was a book published in England called "The Green Consumer." It became an overnight runaway bestseller, now available in every market of the world. Let me give you a quote from the original version:

"People have discovered that it's an extraordinarily empowering experience to walk down the supermarket aisle and realize that you're voting for or against the environment with every product purchased." For many of our decisions -- buying a new car, buying a new washing machine -- environmental decisions can only be exercised very infrequently and at a high price. If you choose one kind of car versus another, that difference may cost you a lot of money. In the supermarket, you buy very frequently, very inexpensive products. You can make marginal environmental decisions every day in the supermarket at very little cost to you. So the consumer finds the supermarket a convenient place to exercise their environmental consciousness at a very small price tag compared to other areas of their lives.

The issue in the United States is, of course, solid waste. Our landfills are filling up. Many states have no landfills at all available now. Very quickly New Jersey is going to be trucking all of their garbage out to other states. We literally have garbage watches on the borders of states, looking

for trucks coming in from out-of-state to dump product in their landfills. This is driving up the cost of garbage collection and when we drive up the cost, it becomes a pocketbook issue and consumers respond to pocketbook issues.

I salute the industry for the tremendous progress we've already made on environmental issues but would just say to you, we need to keep the pressure on.

This brings me to my fifth issue that of America, European Style. That is Environmental Site Restrictions. Many of our operators now tell me that just to comply with environmental site restrictions easily adds a year to the lead time for developing a new store. And, in some cases these restrictions close out sites altogether just because of the risk of carrying the cost to clean up what someone else may have done 20 years ago. It's becoming tougher to find supermarket sites.

Why do I say this leads to America, European style? In Europe it's been tough to find sites because the government has required operators to get permission to open large supermarkets. That's been a way for governments to protect the small operator. We have not had that here. But now we're getting something equivalent to it. It's tough to find sites in the U.S., not because the government prohibits you, but because environmental site restrictions are so tough to deal with. These limit where you can put a store and they certainly limit how fast you can get one constructed.

Summary

So in summary, for my America European Style issues, I would say to you that I think at the end of the '90s America is going to look more like the European supermarket, industry because:

1. We have severe problems with Capital Availability. It's much tougher for new operators with a lot of talent but no cash to break into the industry, just as it has been tough for new small operators to build supermarkets in Europe. New entry in the 90's will depend more on taking over existing stores closed by other companies and less on building new supermarkets.
2. We have a New Marketing Mix to deal with which consists of a shift toward manufacturer trade promotion spending. This shift in promotional spending is reflective of a shift in the balance of power toward retailers and wholesalers much in the direction of what we see in Europe.
3. We see new Marketing Alliances forming to cope with the intense competition of the 90s. While these can generate significant new distribution efficiencies, they can also lead to a more European style of bargaining.
4. We see Upscale Private Label revisited as a way to cope with the trends of the '90s.
5. And, we see Environmental Site Restrictions making it more difficult to site new stores much as European governmental restrictions on store openings have slowed growth.

If America looks more like Europe at the end of the '90s the net result will be to transfer market power to food retailers and wholesalers, but only to the survivors. There's a danger in all of this that there can be quite a shake-out for those who don't understand the trends of the '90s and aren't on the cutting edge of dealing with them. This, we think, is FMI's prime mission. That is, to help all of our members to be among the survivors who will continue to serve the shoppers of the next century.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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AGRICULTURE OUTLOOK '92

FOR RELEASE: WEDNESDAY, DECEMBER 4, 1991

1992 FLORICULTURE AND ENVIRONMENTAL HORTICULTURE OUTLOOK¹

Doyle C. Johnson

Agricultural Economist, Economic Research Service

I would like to first outline production trends for nursery and floriculture crops and the likely directional changes in U.S. retail markets and then highlight critical industry issues.

1992-93 Horticulture Prospects Are Good

Greenhouse and nursery agriculture continues to outpace all other major farm sectors. Producer cash receipts of \$8.1 billion in 1990 grew by 7 percent over 1989 and contributed 10 percent of all farm crop cash receipts. In 1990, greenhouse and nursery agriculture ranked seventh among all commodity groups and in 21 states it ranked in the top five commodities in cash receipts.

Steady and continued market expansion can be expected in the next year or two for floriculture and environmental horticulture crops but growth and overall performance of this industry will depend heavily on the general economy and consumer spending.

The 1991 grower cash receipts are expected to total \$8.7 billion or 7 percent more than last year. The 1992 outlook is for receipts to grow another 9 percent to \$9.5 billion. Producer sales of most greenhouse crops will likely expand significantly in 1992 while expansion in nursery crop sales will be moderate. Markets are expected to strengthen in 1993, especially for nursery crop sales as construction activity enhances demand for landscaping plants.

Even though we are now experiencing a recession and economic growth has slowed substantially, the greenhouse and nursery industry is still expected to continue its expansion. If economic activity accelerates in 1992 and 1993, the outlook will be for double-digit growth in producer sales for most categories of greenhouse and nursery crops. If the economy continues on its current track, overall growth in grower cash receipts is still expected to range 6-8 percent above this year. Higher growth rates are expected in wholesale and retail sales than in grower sales due to increasing imports.

¹ In this report, the terms "horticulture", "greenhouse and nursery", and "floriculture and environmental horticulture" are used synonymously. The subject matter for this outlook session relates to "non-edible horticulture" crops, which are primarily those grown for ornamental and environmental purposes. Food crops are excluded but sales of nursery stock and other plants used in food production agriculture are included.

Demand for greenhouse and nursery products at the producer level is directly linked to retail market demand which is driven by the gross domestic product (gdp). The United States has the largest gdp in the world and therefore represents the largest flower and plant market in the world. The U.S. gross domestic product in 1991 showed a slight decrease from 1990 but the gdp is expected to grow by 3-4 percent in 1992. The markets for ornamental and environmental products are very responsive to greater per capita income which is the direct result of the gross domestic product.

Consumer Expenditures Expected To Improve

With renewed consumer confidence, retail expenditures for greenhouse and nursery products will surge ahead of the last two years. Retail expenditures in 1990 are estimated at \$38 billion (\$150 per capita); are projected to top \$40 billion this year, and are forecast to reach nearly \$44 billion in 1992 (\$172 per capita).²

The estimated size of the U.S. greenhouse and nursery industry at \$38 billion for 1990 compares with an estimated \$49 billion for the U.S. fresh produce industry.

Consumer expenditures for environmental horticulture products is expected to increase to about \$25 billion in 1992 or to \$97 per capita. A sharper rise is anticipated next year in expenditures for floricultural products which should exceed \$18 billion or \$71 per capita. Expenditures for floricultural products are expected to pick up next year as consumer spending gets back on track but expenditures will lag for environmental products such as landscaping trees.

The greenhouse and nursery industry is comprised of two major segments: the floricultural product segment and the environmental horticulture product segment. Environmental horticulture products (primarily nursery crops, turfgrass, and bulbs) account for about 58 percent of total expenditures. Floricultural products (comprised of cut flowers, cut cultivated greens, potted flowering and potted foliage plants, and bedding and garden plants), account for about 42 percent of total expenditures.

Cut Flowers and Greens Markets Steady But Will Accelerate

Consumer expenditures for cut flowers and cut greens increased a modest 3 percent in 1990 to \$5.9 billion and will rise another 3 percent this year to \$6.1 billion or to \$24 per capita. However, next year expenditures could rise to \$6.7 billion or to \$26 per capita.

Markets are continuing to be more competitive as supplies increase. Supplies of cut decorative greens have skyrocketed this year as the productive capacities of foreign growers in Latin America have recovered from hurricane and other weather-related damage. Imports of the major cut flowers (roses, carnations, and chrysanthemums) have also continued to rise sharply. Other flowers that have jumped in volume imported include gypsophila and statice.

² Expenditure estimates in this report include commercial and residential purchases but do not include the value added for services such as interior or exterior landscaping, lawn and tree maintenance, etc.

Although prices for most cut flowers were generally higher this year, prices for the major cuts were experiencing downward pressure from imports especially during peak demand periods around Valentine's Day, Easter, and Mother's Day.

Notably, imports of "Dutch-type" specialty flowers, including freesia, gerbera, lilies, irises, and tulips, are lower this year. This trend began when the Persian Gulf Conflict started in August 1990 and has continued to date. Cargo space became scarce at that time and fuel costs rose, but now it is evident that more flowers are moving through the Dutch auctions to meet higher European demand and prices are generally rising in those markets.

Similarly, higher Japanese demand for orchids and other exotics has resulted in lower available supplies for the U.S. market. More favorable exchange rates for European countries compared with the United States or Japan are also impacting international floral trade as well as higher costs to service foreign buyers. This has slowed floral exports from Europe to non-European countries.

Total U.S. sales (domestic production and imports) of cut flowers reached about 5.6 billion stems (22.4 stems per capita) last year and 1991 sales should exceed 6 billion stems (23.8 stems per capita). About 61 percent of this volume is imported. Total cut flower sales are projected to increase 10 percent in 1992. Sales of cut roses, continued to trend upward and in 1990, topped 1 billion stems (4.1 stems per capita) for the first time. The 1991 sales are expected to exceed 1.1 billion stems or about 4.5 stems per capita.

Potted Plant Expenditures Will Jump Next Year

Consumers spent about \$3.3 billion for potted flowering plants and about \$2.4 billion for potted foliage plants in 1990. Expenditures in 1991 for these potted house and patio plants (including hanging baskets) will rise moderately. However, in 1992 expenditures are expected to increase sharply, especially for flowering varieties. If the economy continues to be sluggish for the next 6-9 months, this rise may not begin in earnest until fall/winter 1992 and spring 1993.

Expenditures for flowering potted plants will hit \$4.1 billion (\$16 per capita) in 1992 while foliage plants may reach \$2.7 billion (\$10.70 per capita).

Growth in sales is continuing for poinsettias, chrysanthemums, impatiens, florist azaleas, lilies, geraniums, and begonias. Other flowering plants are also doing very well including African violets, cineraria, cyclamen, New Guinea impatiens, kalanchoes, marigolds, pansies, petunias, primula, salvia, and vinca. Demand for herbaceous perennials and flowering bulb plants is excellent.

Sales of flowering potted plants in 1990 and 1991 were mostly higher due to production increases and not price increases. Sales are expected to improve next year with more favorable prices and larger volumes. Consumers are seeking larger and higher quality plants, multi-color varieties, and plants with rich, vivid colors.

Sales of potted foliage plants are marking moderate gains after several years of downturn. Demand is improving due to consumer environmental concerns, better products, lower prices for some species, and new varieties of foliage plants. Ficus, dracena, tillandsia, yucca, hydrangea, spathiphyllum, diffenbachia, schefflera, and anthurium are currently the best sellers in export markets and should likewise sell well next year through all outlets.

Bedding and Garden Plant Markets Very Strong

The bedding and garden plant subsector is the largest within the floriculture industry. It will also likely be one of the strongest demand areas for 1992-93. Increasing demand for bedding/garden plants stems primarily from landscaping contractors, homeowners, institutions, and others needing to maintain the appearance of outdoor environments. Vegetable bedding plants have shown only moderate growth in demand in recent years and are expected to continue this trend. Conversely, flowering bedding plant demand has been very strong, even in a slow economy. Sales of flowering annuals and perennials are expected to make strong gains in the next year or two. The spring 1992 season should be brisk for growers, wholesalers, and retail outlets such as garden centers, with the exception of some areas of the Northeast where sales will be sluggish, primarily due to slow construction and real estate markets.

In 1990, retail sales of bedding and garden plants totaled an estimated \$4.3 billion (\$17 per capita). This year sales are expected to rise to \$4.7 billion and in 1992 sales are projected to top \$5.4 billion or slightly higher than \$21 per capita.

Trends in bedding and garden plants include fewer plants per flat or pack and larger plants. Multi-color bowls, and multi-variety packs are selling well. Strong sales trends are occurring in unfinished stock, including cuttings, liners, plugs, prefinished plants, and tissue cultured plants. Bedding and garden plants that have shown strong demand include begonia, geraniums, pansy, petunias, impatiens, marigolds, dianthus, verbena, vinca, zinnia, and salvia.

Horticultural Prices Stymied By Higher Supplies and Slow Economy

Although the 1990 grower prices were higher for most floral, potted, and bedding plant crops, prices this year were either weaker or slow to move much higher due to the lackluster economy and higher quantities of imports. Grower prices are generally expected to re-strengthen next year. However, it remains to be seen whether or not the economy will be strong enough to bolster demand by spring 1992 when most of the cut flower, bedding/garden, potted plants, and nursery crops are ready for market.

Although U.S. exports of greenhouse and nursery products are increasing significantly, imports are rising much faster. In addition, the quantities of imports have been making larger gains than the values of imports. This translates to a general downward trend in the prices of imported products. For example, imported cut flowers for 1990 increased a modest 3 percent to \$326 million but the total quantity increased 22 percent to 3.4 billion stems. This trend continues in the first 10 months of 1991 as imported cut flowers should reach a record 3.7 billion stems for the year. Similar trade patterns are occurring for other greenhouse and nursery products such as cut cultivated greens, bulbs, and live plants.

Industry Development Hinges On Government-Business Cooperation

Greenhouse and nursery agriculture is of major economic importance to farmers, rural communities, and the general public. Generally, the greenhouse and nursery industry receives no government payments or subsidies but does need government protection to maintain phytosanitary restrictions, plant patents and standards, and fairness in trade. The industry also needs government assistance to re-register and develop "minor-use" chemicals to combat major plant disease and insect problems, such as white rust and the poinsettia whitefly. Environmental issues, water availability, and labor regulations are major concerns to greenhouse and nursery growers since this industry is the most input-intensive in agriculture.

In addition, the industry will need joint government-business cooperation to develop new products, expand domestic and export markets, new technology to improve production and marketing efficiency, and government supported programs to collect the necessary statistics and provide sound economic intelligence to assist domestic producers and marketers maintain their competitiveness and enhance their profitability.

In contrast to food, feed, and fiber products, greenhouse and nursery agriculture looks most promising. When "value-added" services and employment are added, this industry outranks most other traditional agricultural commodities. In order to further advance its market potential and economic impact, the industry should continue developing the necessary self-help research and promotion programs and endeavor to shift the research and educational emphasis from traditional agriculture to ornamental and environmental crops.

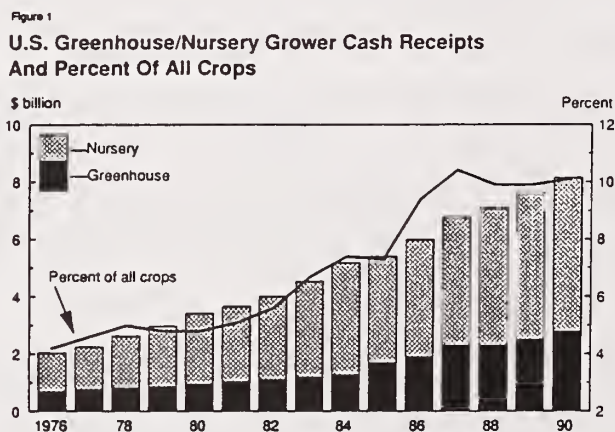


Figure 2
Environmental and Floricultural Products
Value of U.S. Consumer Expenditures

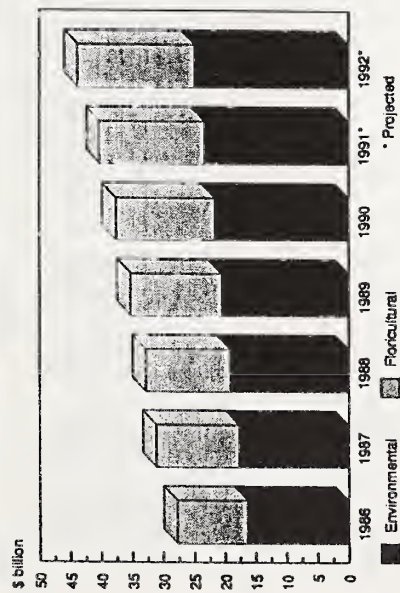


Figure 4
Cut Flowers and Cut Greens: Value of U.S. Consumer Expenditures

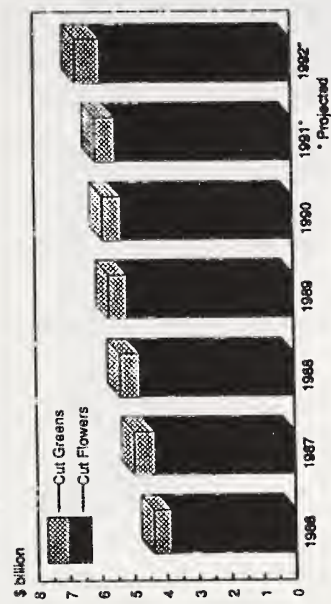


Figure 3
CONSUMER EXPENDITURES: FLORAL & NURSERY PRODUCTS

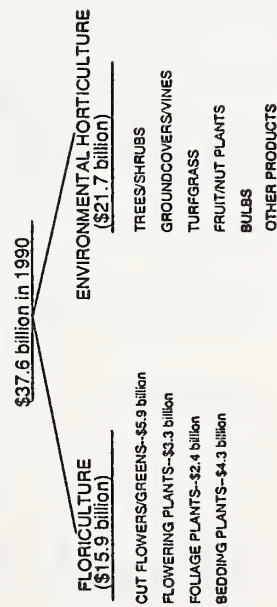


Figure 5
Per Capita Consumption of Cut Flowers

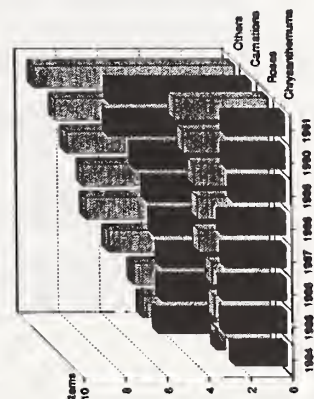


Table 1—U.S. imports of fresh cut ornamentals, 1988-90 and 1991 indicated 1/

Item	1988	1989	1990	Indicated 1991	Change 1991/90	Percent of total
						Percent—
				1,000 stems		
Alstroemeria	81,470	69,088	80,168	83,000	3,3	2.3
Camassia	934,314	1,012,028	1,058,653	1,028,200	-2,9	28.2
Camassia, min. 2/	235,370	236,150	268,270	313,700	16,9	8.6
Chamaelirium 2/	411,250	320,150	332,825	408,600	22,8	11.2
Chrysanthemum	26,097	27,278	32,497	33,000	1,5	0.9
Poinsettia 2/	508,278	427,128	524,034	547,200	4,4	15.0
Dianthus	20,157	25,275	19,048	19,700	3,4	0.5
Peonies	31,008	30,716	28,574	22,100	-22,7	0.6
Gerbera	32,620	30,266	31,510	30,300	-3,8	0.8
Glaucol	3,155	3,720	4,560	3,500	-29,4	0.1
Gypsophila 2/	52,220	70,940	90,570	116,500	28,6	3.2
Iris	25,059	29,038	27,070	19,100	-29,4	0.5
Landinif	880	445	3,254	32,500	898,8	0.6
Lilac	775	210	315	700	120,2	0.7
Lilium	31,387	34,381	38,120	26,600	-30,2	0.6
Miscellaneous ferns	6,626	5,657	11,031	20,500	84,5	0.1
Orchids, cymbidium	5,297	3,271	3,083	20,400	13,3	0.1
Orchids, others	12,867	21,028	24,469	408,500	15,6	0.6
Roses	287,169	314,155	427,238	107,900	21,9	3.0
Statice 2/	77,856	82,164	83,568	52,700	-26,0	1.4
Tulips	38,594	68,478	71,324	263,000	2,2	7.2
Other ornamentals	145,461	199,044	257,189	3,423,302	6,6	100.0
TOTAL	2,967,210	2,812,050	3,423,302			

1/ Excludes imports from Canada. Indicated 1991 based on inspections to November 2.

2/ Revised from benches to stems.

Source: Federal-State Market News Service tabulations of Plant Protection and Quarantine Office inspections, U.S. Department of Agriculture.

Figure 7
Potted Foliage Plants: Value of U.S. Consumer Expenditures

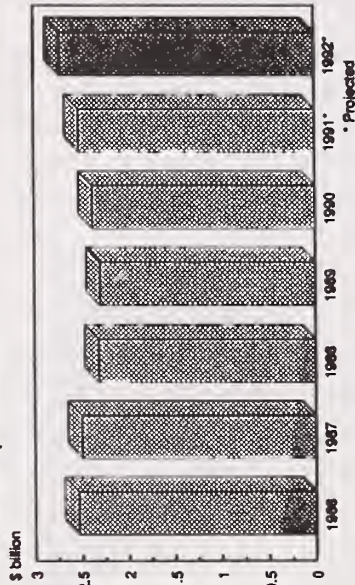


Figure 8
Bedding/Garden Plants: Value of U.S. Consumer Expenditures

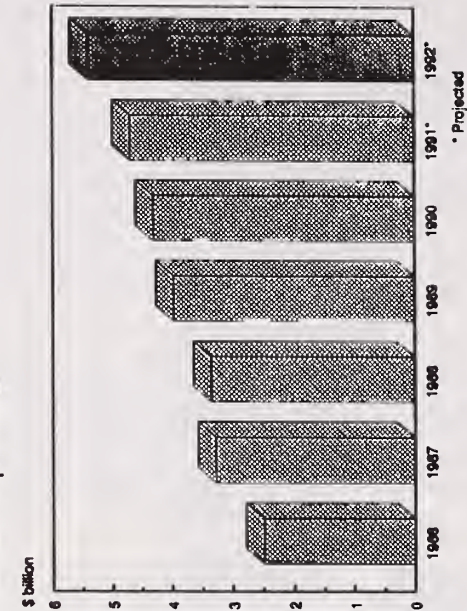
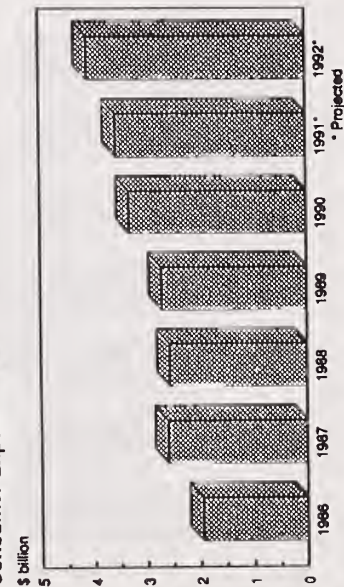


Figure 6
Potted Flowering Plants: Value of U.S. Consumer Expenditures



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Outlook '92

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THE IMPACT OF TRADE AND ENVIRONMENTAL REGULATIONS ON U.S. NURSERY AND GREENHOUSE PRODUCERS

Scott D. Rawlins
Director, Horticulture Department
American Farm Bureau Federation

The outlook for the entire floriculture, nursery, greenhouse and ornamental sector is very good. This is the fastest growing sector of agriculture with apparently no upper limit. I call this sector of agriculture the "green" industry because of its inherent qualities, because it appeals to environmentally-minded consumers all of which translates into dollars.

The 1990 value of the floriculture sector is \$2.77 billion up 10 percent from 1989 and up 23 percent from 1988. Keep in mind that these are incomplete numbers. They represent only a survey of 28 crops from 28 states. The true size of the industry is unknown.

Since 1988, sales of all floral items through retail outlets increased by some \$3 billion, from \$9.9 billion to \$13 billion. Compared to 1982 this is a growth of about \$7.2 billion or about \$900 million in sales per year. There are now 41,000 florists shops nationwide. Since 1972, the number of florists shops has increased by 11,400 or about 635 shops per year.

The Professional Plant Growers Association's annual grower study shows that the bedding plant industry grew an average of 15 percent yearly for 13 years. It is now seven times the size it was 15 years ago. In 1990, for the first time, the bedding plant industry exceeded \$1 billion in wholesale annual sales.

The entire nursery/greenhouse sector including floriculture crops, sod, bedding plants and other products totals over \$9 billion in farm value. This green industry is rapidly overtaking some very important major crops, including citrus, apples, rice, cotton and wheat.

This is an industry without an identity. No one knows the true size and not many lump it in with conventional agriculture. Some states do not recognize it as bona fide agriculture. We don't know the total economic impact. We don't have value-added numbers. We don't have associated industry numbers such as landscape services.

Today, I will discuss the impacts of world trade and environmental regulation and how they affect this developing green industry. Trade and environmental

regulations are clearly intertwined and can not be considered without the other.

The impacts of trade center around the GATT and the outcome and potential of a North American Free Trade Agreement. It now appears that our GATT negotiators will come to an agreement very soon. It is likely that the European Community will make some concessions on oilseed processing subsidies and restrictions on corn gluten imports to achieve this. There is also talk on both sides of addressing non-trade barriers such as phytosanitary requirements. This is the main area of concern for the green industry especially if the EC tries to characterize current United States Quarantine-37 regulations as non-trade barriers. They clearly are not.

Much of the pressure to relax Quarantine-37 standards comes from a lack of growth in export markets to the United States. Cut flowers are the key to export markets and act as the underlying push to relax Q-37 standards.

The value of U.S. nursery and greenhouse imports has increased over threefold since 1979. The value of cut flower imports has increased over four times. In 1979, cut flower imports accounted for 53 percent of all green imports. (Table 1) That number has now risen to 70 percent.

Colombia and the Netherlands account for over 90% of all cut flowers imports. Colombia alone accounts for 80 percent of that total. In 1983, the U.S. market for cut flowers from Colombia represented over 80 percent of all Colombian exports. Colombia has found new export markets since then and now sends roughly 60 percent of their total exports to the United States. (Table 2)

The Netherlands is the primary player in the world green market, accounting for over 50% of world exports. But, the United States market has given them limited success. In 1981, 3 percent of the Netherlands exports came to the United States. By 1985, they were able to more than double that percentage to 7 percent. Since then, that percentage has declined back to 4 percent. Both Colombia and the Netherlands have lost their percentage of U.S. market share. (Table 3)

On the consumption side, Japan consumes the greatest quantity of cut flowers per capita. U.S. consumers rank 12th, spending \$21.88 per person. (Table 4) The world looks at the U.S. market for cut flowers as an untapped resource. The Netherlands and Colombia are filling that need, but realize that continued strong export growth will have to come from products other than cut flowers. Hence, the push to relax Q-37 regulations.

U.S. per capita sales of all floral items reached a record high in 1990, of \$51.69 according to information compiled by The Floral Index. Japan has the greatest potential to increase exports as they have devoted the most acres to production, but to this point they have not. (Table 5) Part of that is due to price. They simply can't bring product here at a competitive price.

The Netherlands and Colombia are finding expansion limits in the U.S. cut flower market. U.S. producers are catching up in both quality and price. Importers are looking for new market opportunities for their floral products, but look at Q-37 as a barrier.

This increasing world competition in green products, coupled with the loss of U.S. market share is increasing the pressure to remove all trade barriers. A successful GATT agreement for agriculture will heighten the call to loosen Q-37 regulations. But, Q-37 is not a trade issue. It clearly is a biological problem.

The Animal Plant Health and Inspection Service (APHIS) will propose several more amendments to Quarantine-37 during the next three years. These amendments will change the list of plants allowed into the United States in response to requests from importing countries. These changes, if approved, will allow an additional 10,000 species into the United States. Additional imports and the corresponding introduction of exotic plant pests potentially affects all of agriculture. Clearly, Q-37 will control the trade in green products.

There are excellent reasons to maintain current Q-37 standards. The poinsettia whitefly infestation now affecting California, Arizona and Mexico exemplifies this problem. No one seems to know exactly where this pest came from or how it entered the country. Most agree that it entered the U.S. in Florida on poinsettias from either Turkey or Iran. Growers in the Imperial Valley of California are now paying the price for lax standards.

APHIS contends that current inspection techniques will sufficiently reduce the risk that new pests will enter this country. Citrus canker and gypsy moth are examples of introduced pests that inspectors missed. Thrips palmi is a new pest that we did not catch. The Medfly is a pest we can not stop despite our best efforts. These examples should remind us of the difficulty in exclusion and the nearsightedness of allowing additional species into this country.

There are other issues for opposing relaxation of Q-37 standards. Perhaps the best reason is related to pesticides. During the APHIS, Q-37 hearing held in March of this year, Dr. Michael Parella of the University of California said this:

"Contrary to the characterization of improved pest control overseas, some countries possess only out-of-date or inadequate scientific documentation of pests associated with ornamentals. In other cases, such as the Netherlands, a greater use of pesticides overseas raises the possibility of pesticide-resistant strains being introduced into the United States. With such intense pesticide application, any pests remaining in plants ready to be shipped to the United States are probably resistant to one or more pesticides."

The ability to control plant pests now present in the United States has become increasingly difficult due to the loss of minor-use pesticides. The introduction of new plant genera and the potential for the introduction of new plant pests will add to the list of pests that United States growers can not control. This is where trade and environmental regulations become intertwined. Because of this, United States producers are forced to compete with one hand tied behind their back.

Changes in the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), enacted by Congress in 1988 have severely limited the availability of safe and effective pesticides for green crops. In the reregistration process, non-food uses of pesticides have a low priority at the Environmental Protection Agency (EPA) and through the Interregional Research Project #4 (IR-4). In

1986, IR-4 supported 292 ornamental uses, but only 65 in 1989. The inadvertent and accidental introduction of a plant pest will create a special need that farmers can not control with currently registered pesticides. FIFRA regulations subject nursery and greenhouse uses to the same reregistration limitations as food-feed uses. If we lose food-feed registrations, then the nursery industry loses these as well.

A wide open Q-37 will severely affect the domestic industry. In accordance with Office of Management and Budget guidelines, APHIS conducted a cost-benefit analysis of proposed Q-37 revisions. The impact analysis shows that although U.S. consumers might benefit from increased supplies of plant material and subsequently lower retail prices, the floriculture and ornamental industries stand to lose an estimated 3 to 8 percent in total revenues annually at the wholesale level. An estimated 8 percent loss could total \$216 million in floriculture revenues--and that's only in the top 28 producing states. That is a direct impact from increased imports and lost markets for U.S. producers.

The wide range of climactic conditions that exist in the United States has enabled the development of a multi-billion dollar per year nursery and greenhouse industry. A single new plant pest introduced because of abandoned Q-37 regulations could devastate this industry in eradication costs and lost exports.

The introduction of new plant pests will add to the list of barriers erected to prevent additional industry growth. This growth is essential for the industry and for other farmers seeking alternate sources of income.

U.S. producers ship roughly 50 percent of their product interstate. These shipments must be 100 percent pest free. Most of these shipments are in soil, increasing the probability that pests are present and increasing the need for pesticide applications. Some states require treatment before plants are allowed to enter the state. This is the very least we should expect from our trading partners.

The trade area is key for U.S. producers. If we open up Q-37 it will damage and change the industry. New pests will affect nursery and greenhouse producers as well as conventional agriculture.

The second trade concern is free trade with Mexico. The American Farm Bureau Federation just completed a study on the expected impacts from a U.S./Mexico free trade agreement. We found that Mexico's ability to increase horticultural exports is limited by the rapid growth of its own population and a lack of capital. According to the study, Mexico's ability for expansion will depend on attracting foreign investment. Ironically, if Mexico becomes a threat it will largely be due to investment from U.S. growers themselves.

We support free trade with Mexico as long as adequate quarantine and phytosanitary regulations remain in place. We have also pushed for the creation of consistent regulations on pesticide use and availability and worker safety provisions. We also need protection of intellectual property rights for plant patent owners.

An important policy goal in this ever-emerging global marketplace must be to seek uniform rules and regulations for pesticides, not only within the U.S., but internationally as well. Increasing the role of the United Nations Codex

Alimentarius Commission needs particular emphasis.

There are two main areas of concern for U.S. producers related to environmental regulations. The reauthorization of FIFRA, and the reauthorization of the Clean Water Act.

FIFRA presents two problems to growers; FIFRA pre-emption and minor-use pesticides. The most pressing problem for the U.S. industry is the minor-use pesticide problem.

First, it is important to note that environmental constraints will not slow industry growth. The entire industry will grow. Environmental constraints will, however, change the structure of the green industry. Growers who can cope with ever-increasing environmental regulations will thrive and grow the most. Growers who dedicate themselves towards gaining a technical advantage will flourish. This will probably be large growers who have the financial resources to take risks and change the way they farm. Large growers can dedicate plots to experimentation to reduce input costs and gain an advantage over their competitors. Medium and small size farms where growers do not have the financial and technical resources available to farm under these constraints, will continue to grow, but at a slower rate.

As mentioned before, trade and minor-use pesticides are related. The loss of minor-use pesticides is a pressing concern for U.S. nursery and greenhouse producers. Farm Bureau is part of a coalition of producer groups formed to address the minor-use problem. High on our priority list are solutions that will reduce reregistration costs for minor-use pesticides.

Included in this plan is a better working relationship between grower groups and EPA. We don't expect EPA to be an advocate for agriculture, but we also don't expect them to be an opponent or antagonist. If EPA is part of the problem as we have said, then they must also be part of the solution.

USDA also is an integral part of the overall solution. We haven't seen a strong advocacy position for minor crop producers from USDA. As a first step in correcting this, USDA would send a strong message to minor crop growers merely by seeking full funding of the IR-4 program. USDA is very good at publicly supporting the needs of minor crop farmers, but actions have not followed those words. Of the \$20 billion USDA will spend on agricultural related spending, less than \$3 million goes to the IR-4 program, a program we consider essential.

Next on the list of impacts for nursery and greenhouse producers is FIFRA pre-emption language. The recent Town of Casey, Supreme Court decision ruling that FIFRA does not prevent local governments from regulating pesticide use is especially harmful for the green industry. Local governments can now enact tougher pesticide laws than those of the federal government and even ban some pesticides. Growers with operations under two different local jurisdictions would have to comply with two sets of regulations; regulations that might conflict with one another.

We are already seeing varying degrees of local control over pesticide use. Right now, Florida growers have to answer to the EPA, the state Department of Environmental Regulation and state water management districts of which there are five in the state.

Another environmental concern for green producers is clean water. The Clean Water Act is up for reauthorization and will affect nursery and greenhouse most in non-point source pollution or runoff. The EPA maintains that the Clean Water Act in its present form is not effective enough to control runoff contamination. EPA just published their Coastal Zone Management Plan which will try to mandate farming practices in environmentally sensitive areas. In addition, environmental regulations will limit water amounts used by green growers and procedures used for water disposal. U.S. producers would be well off to pursue techniques that allow them to reduce pesticide use and eliminate groundwater contamination from runoff.

Growers are banding together to address this problem. To help growers get a better handle on water management, grower groups have formed the Horticultural Water Quality Alliance. The Society of American Florists, the American Association of Nurserymen, the Professional Plant Growers Association, Roses, Inc., and others have banded together to proactively address these problems. They will soon publish a comprehensive water quality manual to help growers improve their water use before it becomes a problem.

Tighter political and environmental restrictions directed toward agriculture will narrow the parameters in which nursery and greenhouse farmers operate. The decade of the 80's was the decade of deregulation. The decade of the 90's is the decade of reregulation. To our advantage many of the developed countries are operating under these same constraints.

U.S. producers need to think long term and globally. Business plans must look at 10 year plans. The ability to move product from one end of the globe to another will determine the winners and losers in the coming decade.

Interestingly, legislation may give another boost to the domestic industry. In February, Representative Joseph Kennedy reintroduced "The Indoor Air Quality Act of 1991." Bills like this may potentially promote domestic nursery and greenhouse production. For example, the Foliage for Clean Air Council is expanding its list of air pollution abating plants. Recent additions to its "clean air machines" recommendations are: ligustrum, photinia, variegated liriope and variegated pittosporum. In laboratory tests, environmental scientist Bill Wolverton found that each plant effectively removed formaldehyde from sealed chambers. After a two hour period, ligustrum had removed 96 percent of the formaldehyde, photinia and liriope 92 percent and pittosporum 75 percent. This represents another new market for the green industry, an industry that has not explored its upper bound.

The trend for the green industry is limitless. Consumers want more and are willing to pay for additional green products. Imports will be limited by the competitiveness of the U.S. industry and a needed strong stance on Quarantine-37 regulations. Nothing will slow the trend towards more environmental constraints. However, they will focus and help our most skilled producers.

Table 1:

Year	Value of Nursery Greenhouse imports	Value of cut flower imports	Percent of total
	1,000 dollars	1,000 dollars	%
1979	145,347	77,994	53
1980	166,544	89,154	53
1981	180,377	103,561	57
1982	212,185	131,530	62
1983	248,431	164,322	66
1984	325,300	214,198	65
1985	342,026	220,870	64
1986	376,784	234,985	62
1987	396,256	243,609	61
1988	451,171	283,505	62
1989	445,374	309,397	69
1990 (est.)	460,000	313,066	68

Source: Floriculture and Environmental Horticulture Products, A Production and Marketing Statistical Review, 1960-88, Doyle C. Johnson, U.S.D.A., Economic Research Service, Statistical Bulletin 817

Source: Horticultural Products Review, U.S.D.A., Foreign Agricultural Service, November, 1991

Table 2:

Year	Cut Flowers		Total Colombian Exports
	Colombian Exports to U.S.	Cut Flowers	
	1,000 dollars	% to U.S.	1,000 dollars
1979	68,963		N.A.
1980	76,487		N.A.
1981	80,407	68	117,466
1982	94,702	77	123,676
1983	111,909	83	134,526
1984	137,542	67	206,160
1985	132,663	67	198,350
1986	136,935	64	214,100
1987	142,590	61	234,700
1988	175,571	62	284,400

Source: Floriculture and Environmental Horticulture Products, A Production and Marketing Statistical Review, 1960-88, Doyle C. Johnson, U.S.D.A., Economic Research Service, Statistical Bulletin 817

Table 3: Greenhouse and Nursery Products: Value of Netherlands Exports

Year	To World	To U.S.	% to U.S.
	1,000 dollars	1,000 dollars	
1981	1,391,268	51,785	3%
1982	1,421,063	60,707	4
1983	1,463,662	74,912	5
1984	1,401,281	100,005	7
1985	1,519,751	111,357	7
1986	2,171,892	129,101	6
1987	2,790,990	135,183	5
1988	3,072,795	143,139	4

Source: Floriculture and Environmental Horticulture Products, A Production and Marketing Statistical Review, 1960-88, Doyle C. Johnson, U.S.D.A., Economic Research Service, Statistical Bulletin 817

Table 4:

Per capita consumption of cut flowers (1990)

Nation	Amount (\$)
Japan	51.25
Switzerland	46.88
Netherlands	45.00
Italy	43.13
West Germany	39.38
Denmark	39.38
Sweden	36.88
Belgium	34.38
Austria	32.50
Norway	30.00
France	28.13
United States	21.88
United Kingdom	21.88
Spain	10.63

Source: Flower Council of Holland, Grover Talks Magazine, February, 1991

Table 5:

Nation	Acres of Production		Percent of total	
	1981	1988	1981	1988
Japan	29,393	35,815	26	25
Italy	13,338	23,959	12	17
United States	14,820	16,459	13	12
Netherlands	13,091	16,302	12	12
W. Germany	14,326	15,808	13	11
France	14,820	14,820	13	10
Spain	3,705	5,681	3	4
Colombia	2,964	5,187	2	4
Israel	3,211	3,977	2	3
Belgium	3,458	3,557	3	3
Total	113,126	141,655		

Source: Jaap Blauw, United Flower Auctions, Aalsmeer, The Netherlands, spoke at Grower Expo '91 on "The World of Cut Flowers."

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INCREASING FLOWER CONSUMPTION THROUGH MARKETING

Peter J. Moran

Executive Vice President, Society of American Florists

Good afternoon. It's a pleasure to be here today on behalf of the Society of American Florists to discuss a vital element of our organization and our industry: the non-holiday promotion of floricultural products.

With countries from all over the world supplying flowers to the American market, and with more than 35,000 retail outlets nationwide, the 12.9 billion dollar industry has tremendous growth potential - more than any other nation.

U.S. flower consumption, however, palls by comparison to other countries. For instance, a recent article in *Florist* magazine sites that as of 1988, the U.S. ranked tenth in per capita flower consumption. The average U.S. consumer spent only \$19.50, compared to number-one-ranked Japan where the average consumer spent \$40. Following Japan in the top five flower consuming nations were Switzerland, the Netherlands, Italy and Germany.

This lack of growth -- and in some cases decline -- in American flower consumption is the reason for the floral industry's heightened awareness of the need for promotion. Growers, wholesalers and retailers alike recognize the need to convince consumers to buy more flowers, more frequently.

At this point, three established holidays still drive much of the focus, promotion and sales revenue of the U.S. floral industry -- Valentine's Day, Mother's Day and Christmas. These holidays, however, come only once a year. So what happens to the rest of the year when there aren't traditional or specific occasions to buy flowers? How do we make flower consumption in the U.S. as common as it is in Europe or Japan? Well, today I'd like to answer these questions by providing an overview of the marketing strategies we are using as an association to increase U.S. flower buying.

Building Year-Round Sales: Challenge and Opportunity

Non-holiday periods represent the floral industry's biggest opportunity for increasing sales. That's why the American Floral Marketing Council continues to make building floral business between holidays its goal. As an individually funded committee of the Society of American Florists, AFMC's focus on non-holiday marketing complements other industry programs promoting holidays. And this crucial joint effort helps maintain sales year round.

That's why our efforts are strongly endorsed by leading organizations from all parts of the floral industry.

For more than 20 years, AFMC has helped thousands of florists build their shops into thriving year-round businesses. Through key marketing efforts, AFMC helps the industry approach its potential to make flowers an everyday purchase; position flowers as the gift that best expresses emotion; increase year-round demand; reduce florists' dependence on a handful of holidays; and provides national support for local marketing efforts.

A "Feelings" Business

AFMC's consumer marketing program benefits the entire floral industry, stimulating consumer demand for flowers and resulting in additional sales for all segments. All of the marketing efforts are driven by the idea that the floral business is a "feelings" business. What the florist is selling is a way to communicate feelings to others. Therefore, all of our promotions are designed to convince people that the most special way to communicate their feelings is through flowers.

We promote the notion that feelings of love and friendship should be expressed, not just on traditional holidays, but throughout the year. Through various marketing techniques, we suggest new occasions for making someone feel special with flowers. For instance, when someone gets a new job, makes the last payment on the mortgage, has their first grandchild, or -- just because.

In this recessionary economy, the competition for consumer dollars is becoming more intense. Today, consumers have more and more choices of products with which to indulge and reward themselves -- from flowers to videos to gourmet food. And the trend toward delivery and other services means that many of these choices are as convenient to purchase as flowers.

Research Tells Us Who and Why

The key to any successful marketing effort is research. Before putting any programs into place, it is important to know who is buying flowers and why. AFMC sponsors Gallup surveys, industry polls and consumer market research that offer insight into what Americans think about flowers and plants.

Our research shows that women, ages 25 to 49, buy flowers most frequently and are most likely to buy on impulse; therefore, making them AFMC's target audience. Additional research shows that the majority of our target audience is married, has children, and works full- or part-time, with an average household income of \$40,000. Within this group, AFMC's marketing campaign targets two different buying segments: buying flowers and plants as gifts; and self-purchase.

Flowers As Gifts

Gift-giving leaves much to the imagination, thus creating a challenge but also great opportunity for the floral industry. Flowers, like no other gift, have emotional appeal and the surprise element of receiving flowers makes them extra special. A recent AFMC Gallup Poll found that consumers think flowers and plants are the best "I love you" gift, the best choice for saying "I'm sorry", and the best choice for making someone feel special. Another Gallup Poll ranked flowers and plants as the number one gift to give to someone who has turned over a new leaf, like starting a diet or quitting smoking.

With these findings in mind, we can help florists introduce promotions for non-holiday purchases like "thank you" flowers, "congratulations" flowers, "romantic weekend" flowers, or "I feel good" flowers. Such promotions remind consumers that flowers are the perfect gift for any occasion; and that no matter whom is the recipient, you can't go wrong with flowers.

Self-Purchase

The second segment: Self purchase for self use, has tremendous opportunity for growth. During difficult economic times such as these, people are spending more time at home. As a result, they want to make their home more pleasant and attractive -- enhance their living environment. Instead of going out to dinner, they entertain friends or family at home. This presents a great opportunity for impulse flower purchases, often captured at supermarkets.

A recent marketing survey called "Households of the 1990s: America's New Grown-ups" states that consumers are shouldering many responsibilities and obligations. Because they spend so much time on others -- from kids' activities to social functions, from work to home -- consumers look for quick and easy ways to pamper and indulge themselves. AFMC promotions encompass the idea of flowers as a spontaneous, well-deserved personal reward.

Effective Marketing = Consumer Awareness

Now that we know who is buying flowers and why, how do we reach them? To target this audience and its buying habits successfully, AFMC is preparing the floral industry for the '90s with marketing programs that respond to new consumer concerns. It emphasizes the importance of florists' relationships with consumers.

AFMC programs help florists develop long-lasting relationships with customers by focusing on service, quality and value. After all, florists aren't just selling flowers, they're selling an ability to convey emotions. And AFMC promotes the value of floral products so that all segments of the industry can profit.

In doing so, much energy is devoted to exploring how to increase sales for each segment in the floral chain. The approaches vary based on the needs of each, but everyone agrees that marketing is the key ingredient to selling more flowers and plants, more profitably.

AFMC uses three marketing tools to get the floral message out to consumers across the country: advertising, public relations and merchandising.

Advertising Leads the Way

Advertising is one of the most effective methods of reaching consumers. Through cost-effective advertising, we are able to use creativity to convey a specific message directly to our target audience.

Through a national radio campaign, we reach more than 52 million consumers during non-holiday periods, informing them of new ways to purchase flowers and plants, and suggesting new reasons for doing so.

Our campaign features touching stories about how flowers have made an impact on a person's life, the ads emphasize relationships and families, and remind consumers how special everyday flowers are. They encourage consumers to think about sending flowers after a first date; a woman sending flowers to a man; or buying flowers for yourself after having a great -- or not-so-great day.

Creative Public Relations Captures Media Attention

Public relations is another effective tool in the marketing mix. Because media placement through public relations is not paid for and, therefore, is not guaranteed as in advertising, creativity is vital in catching the media's attention.

Our public relations program supports the advertising effort by procuring valuable editorial media coverage. The main objective of this program is to garner more continual non-holiday media coverage of flowers and keep top-of-mind awareness of flowers high among consumers. Innovative programs generate news and feature stories about flowers and plants on television, radio, magazines and newspapers. Some big hits include USA Today, the Phil Donahue show, CNN Headline News, Woman's Day magazine, and hundreds of local news clips.

Gallup Poll findings are often used in our effort to procure broadcast and print coverage. Fun and creative, the polls add credibility to our efforts and are a big hit with the media.

Another program -- one of our most successful to date -- is the use of our gift-giving expert.

An established corporate gift and event planner makes public appearances on television and radio talk shows, and conducts print interviews to heighten the exposure of floral products and the industry as a whole. She is not positioned as a spokesperson for the floral industry but as a gift-giving expert who carries the giving of flowers and plants as a big part of her message. She subtly reminds consumers that everybody loves flowers, which makes them a perfect gift.

In 1989, AFMC introduced a long-term marketing program to its participants. The program, called "Flower Signatures", provides five floral arrangement descriptions matched to five distinct personality types. This helps customers and florists communicate better about flowers. This year, AFMC really brought the program into the spotlight by making news with the AFMC's "Flower Signatures Personalities of the Year" awards. The awards honored celebrities who embody the characteristics of AFMC's five "Flower Signature" personalities -- artistic, dramatic, outdoorsy, romantic and traditional.

Among the participating celebrities were Princess Diana; actresses Jodie Foster and Betty White; pianist Harry Connick Jr.; composer and producer Quincy Jones; tennis star Jennifer Capriati, and bicyclist Greg Lemond. The announcements of the awards were carried in newspapers and magazines across the country, reaching several million readers with the concept of matching flower arrangements with personalities. The awards program was created to broaden awareness of "flower signatures" and help consumers identify flowers with the stars.

These are just a few of AFMC's public relations programs that procure valuable editorial coverage, reaching millions of Americans in their daily exposure to the media.

Local Merchandising: The Final Link

A solid merchandising program reinforces the national advertising and public relations efforts by localizing the message. Customers see in their local florist shops what they've heard on the radio or read in the newspaper.

Our merchandising program gives the industry guidance on how to profit from new trends: whether it's women giving men flowers, or new reasons consumers are buying flowers for themselves. We emphasizes service and value messages such as: delivery; designing arrangements that match personalities; and quality, long-lasting product.

Throughout the year, our florists receive marketing kits filled with colorful in-store promotional materials such as full-color posters, window banners, newspaper ads, direct mail pieces and decals. The 1992 kits -- which focus on such emotionally appealing topics as love, friendship, celebration and apologies -- give people fresh new reasons to buy flowers and plants. These creative materials create add-on sales in the store, and spur impulse purchases in supermarkets.

We have also developed a marketing manual which gives florists practical how-to tips and marketing guidance. Step-by-step instructions help florists make long-term business plans, buy local advertising and develop promotions. The manual also features professionally designed advertising and promotional materials including ready-to-use advertisements, statement stuffers, postcards, and fliers. The manual covers all aspects of floral sales to help florists plan promotions throughout the year.

A Marketing Mix That Works

By integrating all of these marketing efforts -- advertising, public relations and merchandising -- our marketing council makes a strong, coordinated influence on the floral industry, creating consumer awareness of flowers for any occasion, while boosting sales between holidays. The overall goal is to ensure the long-term health of the floral industry.

Collectively, we are manipulating consumer buying behavior. By increasing the average consumption of flowers by the American consumer, we can boost the sales of the floral industry to an all-time high. The experience of other industries, such as the American Beef Council, the California Raisin Advisory Board, and the American Dairy Board shows that collective marketing efforts have impact and reach that no individual or local effort can.

That's why our strategy of non-holiday flower promotion is so critical. By promoting flowers as the all-occasion gift and as home decoration, we put flowers in the minds of consumers -- not just during those five major holidays -- but all year long.

Thank you.

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FINANCIAL CONDITIONS FOR THE 1990'S

Mitchell Morehart

Agricultural Economist, Economic Research Service, USDA

Introduction

Analysis of the financial performance of U.S. farm operators is based on farm business revenues and expenses collected annually from the Farm Costs and Returns Survey (FCRS). These data provide the only national perspective regarding the extent of financial difficulties or success experienced by farm businesses. The FCRS is a personally enumerated survey, conducted since 1984 by the National Agricultural Statistics Service (NASS) and the Economic Research Service (ERS) of the U.S. Department of Agriculture. Over 24,000 farms and ranches are contacted during February and March in the 48 contiguous States. The target population is "any establishment from which \$1,000 or more of agriculture products were sold or normally would have been sold during the year." Establishments primarily engaged in the production of field crops, vegetables, fruits, tree nuts, horticultural products, cattle, hogs, sheep, goats, horses, poultry and eggs, milk, honey, and other livestock specialty products such as fish are represented in the survey.

Information obtained from sample surveys, such as the FCRS are only indications of the total population and may differ from data that would be gathered in a complete census using the same questionnaires, instructions, and enumerators. Sample data are also subject to potential non-sampling errors introduced by enumerators, respondents, questionnaire design and other factors. Therefore, direct comparisons between survey indications and other available data should be made only with careful consideration to sample design, data collection procedures, and underlying variable definitions. Survey estimates of income, expenses, assets, and debt will differ from information reported in the Economic Indicators of the Farm Sector Series (ECIFS). ECIFS estimates are constructed from many data sources to represent the entire farm sector. FCRS survey results provide statistically representative estimates for resident farm operators.

Farm business financial performance analysis involves the quantitative evaluation of results from operating and financing decisions made during the course of ordinary business. In assembling financial statements for this

report, all efforts were made to incorporate accounting recommendations of the Farm Financial Standards Task Force. Income statements constructed using FCRS data are for the responding farm operation prior to taxes and exclude any nonfarm expenses and income attributable to households associated with the farm business. Income generated by farm businesses is analyzed through the use of two measures, net cash farm income and net farm income (see box for definitions).

Total assets represent the survey respondents' estimated market value on December 31 of all capital assets owned by the farm operation. Total liabilities are composed of any monetary obligations of the farm operation on December 31. The amount reported includes principal due and any unpaid interest. Debts for nonfarm purposes, even if farm or ranch assets are used as collateral, were excluded.

The income statement and balance sheet were examined separately to determine sources of income, cost structure, the components of assets, and capital formation for different sizes of operations, regional locations, and farm types as they entered 1991. A perspective about overall financial performance of farm business was provided using a framework that simultaneously combines income and solvency measures.

Farm Business Income

Average net farm income of operations represented in survey was \$13,458 for 1990, which was slightly lower than the 1989 average of \$13,673. During the 1987-90 period, average farm business profits were lowest in 1988, a year in which drought conditions were experienced by many of the nation's farms and ranches. Net cash income ranged from 10,602 in 1988 to \$12,735 in 1989. Since 1987, gross cash income has expanded by 10 percent, while cash expenses increased by almost 12 percent. Average income from livestock sales grew by 13 percent over the period. Government payments have declined annually since 1987, going from over 10 percent of gross cash income to below 5 percent in 1990. Average crop sales have shown a corresponding expansion of over 23 percent from 1987 through 1990.

Net Cash Farm Income

Reflects current or short-term cash earnings. This measure is the cash available to farm operations after paying all cash expenses (including interest) for living expenses, principal repayment, income taxes, and other expenses of reinvestment in the farm business. It does not reflect the cash position of farm families because savings, wages paid to family members, and off-farm earnings are not included.

Net Farm Income

Reflects long-term profitability of the farm business. This measure is equal to net cash income less depreciation plus the value of inventory change and nonmoney income. This measure reflects the return or loss to operator and unpaid family labor, management, and equity capital associated with a current year's production. Over time, net farm income shows the farm's ability to survive as a viable business.

Income generated by farm businesses was directly related to economic size of the operation (as measured by gross sales). About two-thirds of farms had gross sales below \$40,000. These small, part-time farm businesses had a 4-year average net farm income of \$280 from 1987 through 1990. Operations with gross sales above \$40,000 are generally considered to be "commercial-size farms." Most operators of this size business regard farming to be their primary occupation. Average net farm income of commercial farms over the period was \$38,000. Just as for all farms, 1987 and 1988 were years in which net farm income was below the 4-year average, while 1989 and 1990 were above.

The share of farms represented in the survey that had positive net farm income ranged from 61 percent in 1988 to 65 percent in 1987. The effects of 1988's drought are also evident at the highest income levels. In 1988, only 17 percent of farms had net farm income of at least \$20,000 compared to 19-20 percent in 1987, 1989, and 1990. The distribution of farms by net farm income category was also influenced by farm size. In 1990, over half of the farms with gross sales of \$250,000 or more had net farm income of at least \$40,000. In contrast, 46 percent of farms with gross sales under \$40,000 had negative net farm income. A higher percentage of farm operations in the largest two economic size classes were profitable in 1990 than were profitable in 1989. Moreover, the magnitude of profit for these farms was elevated given the increase in the share of businesses with net farm income of \$40,000 or more.

Other farm business income highlights include:

- The Lake States, Northern Plains, Appalachia, and Pacific regions experienced their highest average profit in 1990. Increases in expenses outpaced income growth in the Northeast and Mountain regions resulting in lower average net farm income than achieved a year earlier. Despite lower expenses, the Corn Belt and Southern Plains also had a reduction in net farm income in 1990.
- The Northern Plains, Delta, and Pacific were the only regions that had an increase in the share of farms with positive net farm income between 1989 and 1990. Although the Southeast had fewer farms with positive net farm income in 1990, the share with net farm income of \$40,000 or more increased by 2 percentage points.
- Farms that specialized in the production of cotton, nursery or greenhouse items, and dairy products earned the highest average net income over the 1987-90 period. However, relative to the size of their business, tobacco and nursery or greenhouse operations consistently generated the highest profit.
- Cotton and other field crops were the only production specialties that had lower average net farm income in 1990 than earned in 1987.
- The highest percentage of farms with positive net farm income over the 1987-90 period were dairy and tobacco operations. At least one out of four cotton, nursery or greenhouse, and dairy operations had net farm income of \$40,000 or more in 1990.

Farm Business Balance Sheet

The financial position of farms showed steady improvement during the 1987-90 period. Farm operations represented in the 1990 survey had average assets which represented 13 percent of debt compared with an average debt/asset ratio of 17 percent at the end of 1987. Improvement in the average balance sheet of farm businesses reflects increased real estate values and maintained levels of debt. On average, assets grew by nearly 18 percent from 1987 through 1990, while farm business debt at the end of 1990 was 11 percent below 1987 year end levels. Land and buildings, which comprised more than 70 percent of the value of assets, had a 36-percent increase in value over the period. On average, current assets represented about 14 percent of total assets. These assets are items that can be converted to cash or consumed within a year. After a sharp decline between 1987 and 1988, average debt remained around \$51,000 before increasing in 1990.

The share of farms with debt/asset ratios above 40 percent has declined annually since peaking in 1986, when over 20 percent of farms were in this position. The proportion of debt owed by these farms dropped from 67 percent in 1986 to 47 percent in 1990. The reduction in the number of highly leveraged farms was even more evident in highest debt/asset ratio category, where at the end of 1990 only 3.6 percent of farms had debt/asset ratios above 70 percent compared with 8.6 percent in the mid 1980's.

The extent of improvement in the financial position of farm businesses since 1987 varied by size of operation. The largest farms (gross sales of at least \$500,000) averaged a 48-percent increase in equity over the period. However, after reducing liabilities by \$63,000 (12 percent) from 1987 to 1989, these farms had a 6-percent increase in debt between 1989 and 1990. Despite the higher amount of debt, 1990's debt/asset ratio of 18 percent was 8 percentage points below the average for 1987. At the other extreme of size, there was relatively little change in the financial position of farms with gross sales below \$40,000 when compared with the larger farms. For example, the debt/asset ratio averaged 9 percent from 1987-89 and fell to 8 percent at the end of 1990. The most dramatic divergence from the positive trends in the balance sheet of farm businesses over the last several years occurred for farms in the \$250,000-\$499,999 economic class. These farms had an 11-percent increase in average equity over the period, which was the smallest increase of any size farm. At the end of 1990, their average debt/asset ratio of 20 percent was the highest among the different size classes.

The distribution of farms by debt/asset ratio was directly related to farm size as debt capital is one primary source of expansion funds. About one out of three farms with gross sales above \$100,000 had relatively little or no year end debt compared with over 70 percent of farms with gross sales below \$40,000. The distribution of farms by debt/asset ratio category remained relatively stable for farms with gross sales below \$40,000, when compared with changes in the distributions for larger economic classes. Farms with gross sales of at least \$500,000 had the largest reduction in the share of highly leveraged farms, where the percentage of farms with debt/asset ratios over 0.70 fell from 14.7 percent in 1987 to 6.2 percent in 1989. The largest

economic class also had the highest percentage of farms with debt/asset ratios over 0.40 until 1989 when the \$250,000-\$499,999 economic class gained this distinction. Although all sizes of farms had a reduction in the share of operations with little or no debt between 1989 and 1990, the largest (4 percentage points) was for farms in the \$40,000 to \$99,999 economic class.

Other farm business balance sheet highlights include:

- The Northeast was the only region where average debt increased each year since 1987. In contrast to the general trend of declining debt levels, several regions had higher average debt at the end of 1990 than a year earlier including the Lake States, Northern Plains, Southeast, Southern Plains, Mountain, and Pacific.
- Since 1987, average assets increased in all but three regions, the Delta, Southern Plains, and Mountain. The Southeast and Pacific regions had the largest increase in assets over the period.
- The largest decline in average debt/asset ratios over the 1987-90 period occurred in the Lake States and Corn Belt at 6 percentage points. The Northern Plains and Corn Belt ended 1990 with the highest average debt/asset ratios at 20 percent. After successive declines in the debt/asset ratio, several regions had increases between 1989 and 1990 including the Northeast, Appalachia, and Mountain.
- At the end of 1990, the Northern Plains and Lake States had the largest share of farms that were highly leveraged at 6.2 percent and 5.5 percent, respectively. Over the 1987-90 period, the largest reduction in the percentage of farms with debt/asset ratios above 0.70 occurred in the Corn Belt and Pacific regions.
- Nearly all farm types experienced equity growth over the 1987-90 period. Average equity increased most for producers of vegetables, fruit, or tree nuts; nursery or greenhouse; and beef, hogs, or sheep. Cotton farms ended 1990 with equity that was 5 percent lower than 1987's average of \$370,000.
- Vegetable, fruit, or tree nut and cash grain production specialties had the largest reductions in debt over the 1987-90 period at 35 and 17 percent, respectively. Tobacco and other field crop production specialties ended 1990 with their highest average debt since 1987.
- Almost every year since 1987, poultry and cotton farms have had the highest average debt/asset ratios among the various production specialties. Despite an increase in average debt, poultry and beef, hog, or sheep operations were able to close out 1990 with their lowest average debt/asset ratios of the 1987-90 period.

- Average debt/asset ratios increased between 1989 and 1990 for cash grain, tobacco, other field crop, dairy, and other livestock production specialties, yet they remained below averages for 1987.
- Farms that specialized in the production of cash grains and dairy products had the largest reduction in the share of farms with debt/asset ratios above 0.70 during the 1987-90 period.

Overall Financial Performance

The overall financial performance of farm operations can be evaluated by considering their combined net income and solvency positions as measured by debts and assets. Both the debt/asset ratio (a measure of business solvency) and net farm income (a measure of business profitability) have limitations when considered independently. A high debt/asset ratio may be acceptable if a farm generates enough income to service debt and meet other financial obligations. Periods of low or negative income, similarly, may not pose major financial difficulties if the operation is carrying a low debt load and can either borrow against assets or use other sources of income outside the farm business. To reflect this range of financial situations, we use a framework based on the farm business's combined income and debt/asset ratio position.

Performance measures based on net farm income showed that 55 percent of farms represented in the 1990 FCRS were in a favorable financial position. Farms and ranches in a favorable financial position have a positive income and a debt/asset ratio less than 0.40. These profitable, low-leverage operations are able to retain earnings, putting them in a position to take advantage of investment and expansion opportunities. The share of farms in this position has remained relatively stable since 1987, with the exception of 1988; a drought year when 54 percent of farms were considered favorable. A combination of negative income and high debt resulted in 7 percent being classified as vulnerable at the end of 1990. This represents the first increase in the percentage of vulnerable farms, although slight, since 1986 when 11.6 percent of farms were considered vulnerable. In 1990, there was no difference in the financial performance rating of highly leveraged farms between alternative net income measures. There was, however, a considerably lower percentage classified as favorable using net cash income. The distribution of farms by financial performance categories based on net cash farm income suggests that farm businesses were in a stronger financial condition in 1990 than any other year since 1984.

Other highlights of overall financial performance include:

- Farms with gross sales above \$250,000 had their strongest overall financial performance in 1990. Nearly two-thirds of farms in the \$250,000-\$499,999 economic class were in a favorable position at the end of 1990, which was the highest percentage among the different size classes. Overall financial performance deteriorated slightly in 1990 for farms with gross sales below \$100,000 with fewer favorable farms and a higher percentage considered vulnerable.

- At the end of 1990, farm businesses in the Appalachian and Corn Belt regions were in the best overall financial condition having the highest percentage of favorable operations and the lowest share in a vulnerable position. The Pacific and Mountain regions had the highest proportion of farms classified as vulnerable in 1990 at 9.8 percent and 9.5 percent, respectively.
- The greatest improvement in financial performance over the 1987-90 period occurred in the Lake States where the share of favorable farms increased by nearly 9 percentage points. This region also had the share of vulnerable farms fall by more than a 4 percentage points.
- Unlike other areas of the country, there was relatively little change in the financial performance of farms businesses located in the Northern Plains and Mountain regions over the 1987-90 period. After performing well in 1989, financial conditions deteriorated for farm in the Northeast and Southeast.
- Cotton, other field crop, and poultry were the only production specialties with 10 percent or more of farm businesses classified as vulnerable at the end of 1990. This was the highest percentage of vulnerable cotton farms since 1987, while for poultry operations this was the lowest share considered vulnerable over the 1987-90 period. In addition to poultry, cash grain, nursery or greenhouse, and other livestock also had their lowest percentage of vulnerable farms in 1990.
- More than three out of four tobacco farms had a favorable financial performance rating at the end of 1990, which was the highest share among production specialties. Cotton and other livestock were the only production specialties that had less than half of farms classified in a favorable financial position at the end of 1990. The highest percentage of favorable farms occurred in 1990 for cash grain and tobacco operations, in 1989 for dairy producers, and in 1988 for cotton, other field crop and vegetable, fruits, and tree nut production specialties.

Summary

For the majority of U.S. farm businesses, the 1987-90 period can be characterized as a time of sustained recovery from financial difficulties experienced during the early and mid-1980's. Gross income more than kept pace with rising expenses, even with dramatic reductions in Government support. Following widespread drought in 1988, average net incomes rebounded strongly in 1989 and 1990. After several years of reductions in the use of debt capital, 1990 saw a moderate rise in debt-financed capital purchases. At the same time, farm business were generally in a better position to service debt at the end of 1990 than at any other time during the period.

Although declining over time, each year a segment of farms experience extreme financial difficulties. Roughly 7 percent of farms entered 1991 in a vulnerable financial position, having a relatively high amount of debt in combination with negative net farm income. Nearly two-thirds of vulnerable farms had gross sales below \$40,000. These small, part-time farm operations are perhaps better able to cope with financial difficulties, since many have access to off-farm earnings to support their farm business. Although the composition of vulnerable farms has not changed much with regard to farm size, the geographical locations and production specialties associated with vulnerable farms had undergone considerable change since 1987. The Corn Belt had the largest concentration of vulnerable farms in both 1987 and 1990, yet their share of vulnerable farms went from 22 percent in 1987 to 16 percent at the end of 1990. The Lakes States also had a substantial reduction in the share of vulnerable farms. In contrast, the Southeast and Southern Plains regions had the largest increase in vulnerable farms over the 1987-90 period. The proportion of vulnerable farms that specialized in the production of cash grain went from 26 percent in 1987 to 18 percent at the end of 1990, which was the largest reduction for any production specialty. There was also a pronounced reduction in the number of vulnerable dairy farms over the period. Farms that specialize in the production of beef, hogs, or sheep have traditionally had the largest number of vulnerable farms. Their share of vulnerable farms went from 34 percent in 1987 to 45 percent at the end of 1990.

In the year ahead the composition of vulnerable farms is likely to undergo further change. The outlook for relatively low dairy receipts will strain those operations which did not benefit from relatively high prices in 1989 and 1990. The impacts are likely to be felt most in the Northeast, Lake States, Corn Belt, and Southern Plains. Similar prospects for the hog sector will likely produce more geographically dispersed financial difficulties. Many farms whose primary commodity was hogs, ended 1990 with a relatively strong financial performance. For these operations, expansion opportunities will be delayed in the short-run. High demand for feed and strong prices should continue the trend towards fewer vulnerable cash grain farms.

Table 1--Farm business income statement for all farms, 1987-90

	1987	1988	1989	1990
	Dollars per farm			
Gross cash income	63,022	62,098	66,258	69,293
Livestock sales	29,561	30,537	33,404	35,424
Crop sales (incl. net CCC loans)	22,864	22,562	27,144	28,251
Government payments ^{1/}	6,430	5,120	3,986	3,158
Other farm-related income ^{1/}	4,187	3,878	4,724	4,480
Less: Cash expenses	51,304	51,496	53,523	57,285
Variable	40,107	40,818	42,548	45,212
Livestock purchases	6,050	6,883	7,182	7,182
Feed	7,588	7,711	7,767	8,209
Veterinary services and supplies	807	745	845	877
Other livestock-related expenses ^{2/}	324	406	406	605
Seed and plants	1,993	1,958	2,095	2,112
Fertilizer and chemicals	5,527	5,559	6,092	6,179
Labor	5,713	5,393	6,013	6,852
Fuels and oils	2,577	2,473	2,535	2,924
Repairs and maintenance	3,884	3,817	4,133	4,138
Machine-hire and custom work	880	1,335	1,438	1,739
Utilities	1,936	1,931	1,844	1,818
Other variable expenses ^{3/}	2,829	2,820	2,860	2,828
Fixed	11,197	10,678	10,975	12,073
Real estate and property taxes	1,428	1,532	1,636	1,812
Interest	5,178	4,728	4,844	5,334
Insurance premiums	1,428	1,406	1,574	1,631
Rent and lease payments	2,963	2,992	2,922	3,297
Equals: Net cash farm income	11,717	10,602	12,735	12,008
Less:				
Depreciation	6,313	5,522	6,330	5,550
Labor, non-cash benefits	300	299	265	294
Plus:				
Value of inventory change	3,667	2,422	4,505	3,971
Nonmoney income ^{4/}	2,773	2,853	3,029	3,322
Equals: Net farm income	11,545	10,056	13,673	13,458

Source: Farm Costs and Returns Surveys, USDA.

^{1/} Includes income from machine-hire, custom work, livestock grazing, land rental, contract production fees, outdoor recreation, and any other farm-related source. ^{2/} Includes livestock leasing, custom feed processing, bedding, and grazing. ^{3/} Includes supplies, registration fees, transportation, storage, and general business expenses. ^{4/} Defined as the value of home consumption and imputed rental value of farm dwellings owned by the farm operation.

Table 2--Distribution of farms by net farm income category, 1987-90

	Negative income				\$20,000-\$39,999	\$40,000 or more
All farms:						
1990	38.5	41.7	8.5	11.3		
1989	37.6	42.8	8.6	11.0		
1988	38.7	44.2	7.7	9.4		
1987	35.0	45.3	9.0	10.7		
Economic Class--						
\$500,000 or more:						
1990	19.7	4.6	4.7	71.0		
1989	24.6	2.7	4.9	67.8		
1988	28.5	6.3	6.3	60.7		
1987	28.2	5.0	3.3	63.6		
\$250,000-\$499,999:						
1990	17.7	10.2	10.7	61.4		
1989	22.9	7.4	11.5	58.3		
1988	24.5	9.4	9.8	56.3		
1987	22.3	8.4	9.4	59.9		
\$100,000-\$249,999:						
1990	21.2	16.9	21.6	40.3		
1989	19.6	15.8	20.9	43.7		
1988	26.0	17.2	20.3	36.5		
1987	21.2	18.1	21.6	39.2		
\$40,000-\$99,999:						
1990	25.3	35.4	26.0	13.3		
1989	24.8	31.9	29.0	14.4		
1988	24.4	32.1	26.7	10.8		
1987	24.1	33.6	26.1	14.2		
Less than \$40,000:						
1990	45.8	50.2	2.9	1.1		
1989	44.2	52.3	2.7	0.9		
1988	44.0	53.7	2.0	0.3		
1987	41.0	55.8	2.9	0.3		

Source: Farm Costs and Returns Surveys, USDA.

Table 3--Farm business balance sheet for all farms, 1987-90

	1987	1988	1989	1990
Total assets	349,362	343,516	375,470	410,600
Current assets	75,535	51,177	50,830	57,111
Livestock inventory	9,463	9,257	11,478	15,322
Crop inventory	11,308	9,441	11,776	11,966
Purchased inputs	1,767	1,836	1,385	1,502
Prepaid insurance	357	394	394	408
Other assets 1/	52,639	30,293	25,797	27,913
Non-current assets	273,827	292,339	324,640	353,490
Investments	2,079	1,472	1,061	1,072
Buildings 2/	215,378	233,852	264,535	291,586
Operator dwelling	46,534	42,342	42,808	48,172
Farm equipment	39,042	39,021	41,303	43,663
Breeding animals	17,326	17,946	17,760	17,169
Total debt	61,069	51,684	51,522	54,053
Current liabilities	15,875	14,237	15,309	14,117
Notes payable within one year	7,575	4,728	5,443	4,981
Current portion of term debt	4,519	5,950	6,254	5,203
Accrued interest	1,583	1,444	1,437	1,504
Accounts payable	2,197	2,116	2,174	2,428
Non-current liabilities	45,194	37,447	36,213	39,937
Non-real estate	na	11,802	13,473	7,890
Real estate	na	25,645	22,740	32,046
Average debt by lender:				
Farm Income Administration	8,403	7,250	6,821	5,879
Farm Credit System	13,497	12,546	11,507	11,707
Commercial bank	19,015	19,204	20,256	21,734
Other	11,864	9,378	9,219	10,802
Commodity Credit Corporation				
crop loans 3/	3,364	2,061	1,108	970
Equity	288,293	291,832	323,948	356,547
Current ratio	4.76	3.59	3.32	4.05
Debt/asset ratio	0.17	0.15	0.14	0.13

na = not available.

Source: Farm Costs and Returns Surveys, USDA.

1/ Includes accounts receivable, certificates of deposit, checking and savings balances, and any other financial assets of the farm business. 2/ The value of the operators dwelling and any associated liabilities were included if the dwelling was located on the farm. 3/ Commodity Credit Corporation crop loans were excluded from both assets and liabilities.

Table 5--Distribution of farm operations by financial position

Income measure and survey year	Financial position		
	Favorable	Marginal	Vulnerable
		Income	solvency
		Percent	
Net farm income:			
1990	55.2	31.5	6.3
1989	55.5	30.8	6.9
1988	54.3	31.0	7.0
1987	55.4	26.8	8.2
1986	47.8	31.3	10.0
			11.6
Net cash farm income:			
1990	44.3	43.8	5.6
1989	43.8	44.0	5.6
1988	42.8	43.6	6.6
1987	45.3	39.8	7.8
1986	41.0	37.0	9.9
1985	40.4	36.3	10.0
1984	40.8	40.1	9.2

Source: Farm Costs and Return Surveys, USDA.

Table 4--Distribution of farms by debt/asset ratio category, 1987-90

	0.00-0.10	0.11-0.40	0.41-0.70	Above 0.70
All farms:				
1990	60.9	35.8	9.8	3.6
1989	62.2	32.2	9.2	5.4
1988	61.6	23.7	9.4	5.3
1987	58.1	24.1	11.0	6.9
Production region--				
Northeast:				
1990	61.5	25.8	10.7	1.9
1989	66.0	24.7	6.9	2.3
1988	64.7	24.2	7.2	3.9
1987	65.4	22.8	8.1	3.7
Lake States:				
1990	48.0	35.4	11.1	5.5
1989	53.3	28.5	13.1	5.1
1988	50.5	27.6	14.9	7.0
1987	47.2	26.2	16.5	10.1
Corridor:				
1990	57.0	31.0	9.6	2.3
1989	57.4	29.2	10.4	3.0
1988	56.0	29.4	10.0	5.1
1987	51.4	27.7	12.9	8.1
Northern Plains:				
1990	46.4	32.1	15.3	6.2
1989	47.3	31.3	14.2	7.2
1988	45.5	32.4	14.1	8.0
1987	42.3	33.6	15.5	8.6
Appalachia:				
1990	70.5	21.1	7.0	1.4
1989	72.6	19.4	6.2	1.9
1988	73.3	17.7	5.5	3.5
1987	70.3	18.3	9.0	2.4
Southeast:				
1990	74.7	14.1	7.6	3.6
1989	74.9	17.0	4.3	3.8
1988	74.2	15.9	7.8	2.1
1987	81.0	21.4	6.5	5.1
Other:				
1990	63.2	22.5	10.8	4.5
1989	67.1	18.5	4.9	9.5
1988	71.1	17.2	7.3	3.7
1987	67.5	17.9	6.8	7.8
Southern Plains:				
1990	69.2	19.0	7.3	4.5
1989	69.2	19.0	7.4	4.4
1988	68.0	19.2	6.7	6.1
1987	66.8	20.5	5.8	6.8
Mountain:				
1990	54.3	27.6	13.5	4.6
1989	55.8	26.9	12.6	4.7
1988	54.1	28.2	10.1	7.6
1987	55.7	24.8	12.5	7.0
Pacific:				
1990	63.9	23.1	9.2	3.8
1989	59.1	23.5	10.2	7.1
1988	60.0	23.0	10.4	6.6
1987	57.3	23.2	11.2	8.3

Source: Farm Costs and Return Surveys, USDA.

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AGRICULTURAL BANK CREDIT OUTLOOK

Douglas G. Duncan
Agricultural Economist, Economic Research Service, USDA

Introduction

Farm banks are setting the performance standards for the rest of the industry. Given the media coverage of existing problems in banking, it is important to note that some banks are not only profitable and sound but prepared to meet good quality credit demand. Agricultural banks are currently the safest and most liquid banks in the system.

That having been said, it must also be noted that the horizon is neither cloudless nor filled with thunderstorms for the banks which lend to farmers. Most prominent on the minds of those of us that track the performance of the banking sector is the current debate over whether and how best to legislatively address the problems it is experiencing. Although the final form of any legislative and regulatory change is not known at this time, I will comment on some portions of the various proposals which bear particularly on agricultural banks and their future prospects.

First, however, I would like to paint a picture of the current performance of farm banks relative to their peers. Second, I will briefly discuss evidence regarding loan demand from agricultural banks. Third, I will comment on the expected availability of credit for agriculture through commercial banks. Finally, I will discuss proposed legislation and other considerations which affect the farm bank outlook.

Farm Banks Lead the Way

Commercial banks held nearly \$53 billion in agricultural real estate and production loans as of June 30, 1991. This represented a 7 percent increase over the previous year. Less than 2.2 percent of all agricultural loans held by commercial banks were nonperforming (past due 90 days or more and still accruing interest or in nonaccrual status) at midyear. This

represented a drop from 2.48 percent the previous year. Chargeoffs rose slightly but still were a mere .07 percent of loans outstanding.

Of the \$53 billion in bank loans to farms, nearly \$30 billion was held by the 4,077 mainly small banks which specialize in farm loans. These banks, which hold a minimum of 16.5 percent of their total loans as farm loans, are currently outperforming both small and large nonfarm banks. Other (nonfarm) banks with less than \$500 million in assets normally serve as a comparison group for the farm lending specialists as very few farm banks are larger than that (e.g., only three farm banks exceeded \$500 million in assets on June 30, 1991). There were 7,384 small nonfarm banks at midyear 1991 and their performance lagged that of the farm banks in almost all categories. These small banks, while not specializing in farm loans, nonetheless held over \$10 billion in agricultural production and real estate loans.

Profits were very strong at farm banks with the average annualized rate of return on equity exceeding 11 percent, the highest since the beginning of the 1980's (Table 1). The small nonfarm banks were one percentage point behind, their best performance since 1985. Return on assets for both groups mirrored the equity measure.

Capital levels were their strongest in a decade for both groups with the farm banks at 10.2 percent and their nonfarm counterparts at 9.1 percent total capital to asset ratio. This was very significant in light of the pending insolvency of the Federal Deposit Insurance Corporation's Bank Insurance Fund (BIF). Capital, of which owner's equity is the most important component, is the cushion which absorbs losses before the BIF is called on. The current debate over bank reform revolves in large part around the fate of the large nonfarm banks which hold much lower equity capital to asset ratios than the two groups of small banks.

A comparison of the quality of the entire loan portfolio held by ag banks versus small nonag banks showed there to be a divergence of trends from a year earlier, although it was not pronounced. Both loan chargeoffs and renegotiated loans had dropped slightly from the previous year for agricultural banks while these same categories had increased slightly for small nonfarm banks. The same trends were in evidence in the delinquent portions of the loan portfolios (Table 2). There, loans overdue more than 90 days declined slightly to 1.9 percent of total loans for farm banks. At the same time they increased to 2.2 percent for small nonfarm banks.

The figures on the delinquencies for the two small bank groups' portfolios pale in comparison to those of the large banks. Fully

4.6 percent of large bank loans were delinquent more than 90 days. These 600 banks with over \$500 million in assets are the source of the current high level of concern among bank regulators and legislators. Large banks are primarily located in urban areas and commercial real estate is a major source of their loan problems.

Over 6 percent of large bank real estate loans were nonperforming at midyear 1991 (Table 3). This compared to only 1.9 percent at farm banks and 2.2 percent at other small banks. Further, the large banks had net real estate chargeoffs of over \$3 billion in the first half of 1991. Interestingly, rural headquartered banks held nearly 50 percent of their loans as real estate compared to only 40 percent for urban banks, yet only 1.8 percent of rural bank real estate loans were nonperforming as opposed to 5.4 percent for urban banks.

The relative quality of the loan portfolios is reflected in the number of weak banks in each group and the change in those numbers from a year earlier. A bank can be defined as weak if its total nonperforming loans exceed its total capital. The number of such banks stood at 129 as of June 30, 1991, down from 147 a year earlier (Table 4). Only 15 of the 129 were agricultural banks (down from 23). The number of weak small nonag banks dropped from 118 to 101. Dividing weak banks by urban/rural designation reveals that weak rural banks dropped by 19 (to 33) while weak urban banks increased from 95 to 96. The most important change however was that the number of weak large banks (assets in excess of \$500 million) rose from 6 to 13.

The decline in the number of weak banks is also good news in that it serves as a rough guide to the number of failures which might be expected in the future. There were 31 farm banks listed as weak at the end of 1989 and 18 farm bank failures in 1990 (Table 5). There were 13 farm banks listed as weak at yearend 1990. Only 7 farm banks had failed through the third quarter of 1991. Therefore, it seems likely that the number of farm bank failures will be down from 1990.

A summary of the current health of the banks which serve farm credit needs shows that they are in their best health since the beginning of the 1980's. Therefore, should any short term adverse events occur in the farm economy, these commercial banks are in good position to weather the storm.

Prospects For Credit Demand

The decline in farm debt outstanding was in large part a demand driven event as producers cut back on loans and thereby interest expense in their income statements. Lenders also contributed to the decline through debt writeoffs. Commercial banks wrote off

between \$4-5 billion in farm loans in the 1980's. These same banks are apparently employing stricter loan quality standards in their lending strategy as a response to those losses.

While lender market shares have shifted, the level of debt outstanding has been in continuous decline since 1983. The decline has slowed the past couple of years and may be poised for a slight increase. Several factors have the potential to increase loan demand. First, an economic recovery will lift incomes causing a general increase in demand for agricultural products. Second, a dip in farm incomes could slightly reduce repayment ability thus leading to a short term increase in loan renewals which might not have occurred had income gone up. Third, natural disasters such as drought, frosts or floods tend to cause some increase in credit demand as the loss of income prevents internal financing of production or expansion thereby necessitating use of credit. One such example is that of the current White Fly infestation in California which has destroyed a significant quantity of produce and may cause some increase in credit required in the affected areas.

Bankers surveyed by the Federal Reserve in the third quarter of 1991 indicate that they expect some continuation of the increase in loan demand which farm banks have experienced over the last couple of years. Farm banks in the Chicago, Dallas, Minneapolis and Richmond Districts were surveyed and all indicated that they expected an increase in farm nonreal estate loan demand except Richmond where expectation was for a slight decline. Banks in the Chicago District felt the strongest about the potential for an increase in demand with 30 percent of surveyed banks expecting an increase and 58 percent the same level of loan demand.

The expectations of increased farm loan demand seemed centered upon general operating loans. Demand for feeder cattle was expected to be down slightly while substantial decline was anticipated in demand for credit from dairies. Loan demand for crop storage and farm machinery was expected to be steady to slightly down at surveyed banks.

These same banks reported constant to slightly slower loan repayment rates. The Chicago (29 percent) and Minneapolis (26 percent) Districts had the greatest number of bankers reporting slower than normal loan repayment. All Districts indicated a slight increase in renewals or extensions of loans with Chicago once again leading the way with 29 percent of its bankers noting an increase above normal rates.

Finally, it is possible that the recent decline in interest rates may spur some increase in the quantity of credit demanded. Preliminary results of research into the effect of Treasury bill rate changes on regional agricultural interest rates indicates a

relationship which is somewhat lagged and less than 100 percent with some regional differences. These results seem to indicate that we might expect decline in farm loan rates in response to recent declines in the discount rate. This may in turn lead to increased activity in some farm loan markets. In part this activity may be refinancing of existing debt to take advantage of the lower rates such as is occurring in home mortgages. In the home mortgage refinancing case, borrowers seemed to be refinancing to lock in lower fixed rates. However, a recent Federal Reserve survey of interest rates on farm nonreal estate loans indicated that nearly 75 percent carried variable interest rates.

Credit Supply Ample At Farm Banks

Once again commercial banks seem to be ready and willing to provide low risk farmer borrowers with credit. Loan-to-deposit ratios at farm banks stood at slightly over 56 percent at midyear. This is still substantially below the levels of the late 1970's and early 1980's although it represents a continuation of the ratio's slow increase of the last couple of years. The small nonagricultural banks had a loan-to-deposit ratio of nearly 67 percent on average. This is in part a result of a more aggressive lending posture but also results from other factors. For example, more of these banks, located in urban centers, use nondeposit sources of funds thus driving up their loan-to-deposit ratios. Also some of these banks are lower return banks with higher levels of nonperforming assets. This indicates that they are taking on some higher risk borrowers at a cost to their own performance.

To be sure, the high agricultural bank failure rates of the 1980's drove home the importance of good credit quality including cash flow and strong collateral. The Federal Reserve quarterly survey indicated that banks in all Districts were raising collateral requirements. This can be expected to slightly dampen credit supplied. Yet these same bankers solidly indicated that loan-to-deposit ratios were below desired levels.

Even as these bankers profess a desire for a higher loan-to-deposit ratio, banks hold the greatest single share of the total farm credit market. They have been increasing their share for several years and held about 35 percent of outstanding farm debt at the end of last year. They may increase that share somewhat in the coming year. The commercial bank share of total nonreal estate farm debt stood at nearly 50 percent, by far the leader in the market. Banks held 22 percent of the farm real estate debt, behind only the 37 percent share of the Farm Credit System.

For the year ending June 30, 1991, commercial banks as a group increased their lending for farm nonreal estate purposes by 5.5 percent and their lending for farm real estate by 8 percent. The

agricultural specialist banks were even more aggressive increasing farm nonreal estate loans over 6 percent and farm real estate loans over 10 percent. Total farm lending by these small banks increased by 9 percent. Given their high capitalization and excellent quality balance sheets, there is no reason to believe that these farm banks will not continue supplying needed credit to farmers.

On the downside of bank credit supply is the issue of bank reform to be addressed below, as well as the current increases in the cost of deposit insurance. Since December 31, 1989 the insurance premium assessed against domestic deposits has increased by 177 percent. This increase in operating costs has to be reflected somewhere in bank operations. One possibility is that banks may be forced to absorb that increased cost by reducing lending. For the average agricultural bank (\$33 million in assets) the increased assessment could result in a reduction in lending of nearly \$200,000 relative to previous levels. This figure may be higher or lower dependent upon individual bank management decisions. There is also anecdotal evidence that at least some of the increased costs will be passed to depositors through reduced interest rates on deposits or increased service charges on deposit accounts. Another option is to attempt to increase loan interest rates and fees to recover the cost. The most likely scenario is a combination of these actions.

In general, notwithstanding banking reform, commercial banks' credit supply for agricultural producers appears to be adequate. High quality borrowers will find lenders competing for their business but banks remain sensitive to the level of collateral and cash flow considerations. Nonetheless, farm banks look to increase their share of the farm credit market.

Whither Bank Reform ?

The status of bank reform has changed almost daily over the last few months as Congress has wrestled with possible action to restructure the rules by which banks and other financial institutions operate. As of this writing it appears that major changes in banking legislation are unlikely.

The one issue that will be dealt with in the current Congress is that of deposit insurance; specifically the health of the BIF. However, even there it appears that reform may be incomplete at best. The most likely scenario entails the recapitalization of the BIF combined with the provision of working capital borrowing power for the FDIC to manage workouts for failed banks. Accompanying this will be some tightening of regulation including perhaps capital requirement adjustments, auditing considerations and, of course, continued higher level insurance premiums.

The BIF is, according to the majority of forecasts, going to be

insolvent by yearend 1991. The Congress and Administration appear to be in agreement on the cost of recapitalization and provision of required working capital -- about \$70 billion. Of course, this must be paid for and will come from the premiums on domestic deposits as addressed above.

Stopping at this, however, would fail to address the fundamental flaw in the current deposit insurance system; a flaw which works against agricultural and other low risk banks. The flaw is the failure to assess the premium according to the riskiness of the bank's portfolio and thus the likelihood of a loss being suffered by the FDIC. Since agricultural banks are the most highly capitalized banks in the system and have the highest quality portfolios as a group, they represent the lowest risk insurees for the FDIC. Yet, they pay the same premiums as the high risk large banks for their deposit insurance.

Congress appears likely to choose to address the difference in riskiness among banks through regulation and oversight rather than insurance pricing. This could work to the disadvantage of small banks also as their compliance costs will increase at a time when cost control is critical to their maintained profitability.

Another aspect of deposit insurance causing concern to farm banks is the differential treatment of failed banks. In particular, the FDIC's policy of "Too Big To Fail" is seen by the small banks as inequitable. This policy essentially says that some banks are so large that for any depositor to lose any portion of deposits in the event of failure would cause a loss of confidence in the banking system as a whole and thus precipitate a large financial calamity. The practical consequence of this policy from the small bank perspective is, while even uninsured foreign deposits (which aren't assessed for insurance) have been made whole in big bank failures, uninsured depositors have suffered losses in small bank failures.

Implications of this are as follows. The assessments are disproportionately paid by small banks as they hold no foreign deposits and relatively few nondeposit liabilities. They are also less risky due to their higher capital ratios, particularly equity capital. Additionally, there is anecdotal evidence suggesting that anything beyond current restrictions placed upon the amount a small bank depositor can have insured may cause large rural deposits to gravitate to large banks which are essentially 100 percent insured. This represents a dilemma for the Congress which doesn't want to force consolidation in banking against the market evidence that small banks can compete effectively given a level playing field and yet it doesn't want to take the chance that financial markets couldn't handle a large bank failure. Evidence is substantial that the most efficient

banks may not be the very large banks but rather the smaller regional banks.

The entrance of commercial banks into insurance and securities markets appears to be dead at the present time. The possibility of interstate banking and/or branching still exists but doesn't appear likely at this time either. However, agricultural banks appear well positioned to survive competition from larger banks which may branch into their markets. The evidence that substantial economies of scale and scope exist for large banks is not strong and local banks know their customers better than nonlocal banks thus they have an advantage in risk assessment. Agricultural loans appear to be one loan type where local banks can exercise that advantage.

Summary

Agricultural banks should continue to serve their borrowers adequately even under increased regulation and costs. They are well capitalized and currently profitable. Their loan portfolios are clean and they have adequate liquidity to service the foreseeable low risk borrower demand for farm credit. They can be expected to maintain or slightly increase their share in the agricultural credit market.

Regulatory change will test farm banks as cost control has been a foundation of their performance. However, they hold high levels of equity capital and, should insurance premiums be restructured to credit banks for equity capital levels, farm banks will benefit relative to their large urban cousins.

Table 1. Selected bank performance measures by type of bank, 1983-91 1/

Performance measure	1983	1984	1985	1986	1987	1988	1989	1990	1991 Estimated
Percent									
Rate of return on equity capital									
Agricultural banks	11.0	9.0	6.0	5.1	7.6	10.0	10.7	10.7	11.4
Nonag small banks	12.0	12.0	11.0	8.3	8.1	8.7	9.9	8.5	10.4
Rate of return on total assets									
Agricultural banks	1.0	.7	.5	.4	.7	.9	1.0	1.0	1.1
Nonag small banks	.9	.8	.8	.6	.6	.7	.8	.7	.9
Provisions for loan losses as a percent of total assets									
Agricultural banks	1.1	1.5	2.4	2.4	1.4	.8	.7	.5	.4
Nonag small banks	.8	.8	1.0	1.3	1.0	.9	.8	1.0	.8
Capital as a percent of assets									
Agricultural banks	9.4	9.5	9.6	9.5	9.8	10.0	10.1	9.9	10.2
Nonag small banks	8.4	8.5	8.5	8.4	8.8	8.8	9.0	9.0	9.1
1/ Rate of return on equity is net income after taxes as a percent of the average of total equity capital at the beginning and end of the year. Rate of return on total assets is net income after taxes as a percent of total assets on December 31.									

Sources: Mellicher, Emanuel, "Agricultural Banking Experience, 1985," Board of Governors of the Federal Reserve System, March 1986, revised appendix date as of November 1986, updated in September 1988 by Nicholas Walraven, FRB Staff, and calculated from the Report of Condition and Report of Income files, Board of Governors of the Federal Reserve System.

Table 2. Nonperforming loans as a percentage of total loans by type of bank, 1983-91 1/

Type of bank	June 30, 1983	June 30, 1984	June 30, 1985	June 30, 1986	June 30, 1987	June 30, 1988	June 30, 1989	June 30, 1990	June 30, 1991
---Percent---									
Agricultural									
Total nonperforming 2/	2.7	3.2	4.1	4.7	3.8	2.7	2.3	2.0	1.9
Past due 90 days 3/	1.6	1.6	1.6	1.6	1.2	.8	.7	.6	.6
Nonaccrual	1.0	1.6	2.5	3.1	2.6	1.9	1.5	1.3	1.3
Nonagricultural 4/									
Total nonperforming 2/	2.5	2.1	2.3	2.6	2.5	2.2	2.1	2.0	2.3
Past due 90 days 3/	1.3	1.0	1.0	1.0	.8	.7	.7	.6	.7
Nonaccrual	1.2	1.1	1.4	1.6	1.7	1.5	1.4	1.4	1.6
1/ Data are weighted by bank asset size. 2/ Columns may not equal totals due to rounding. 3/ Still accruing interest. 4/ Nonagricultural banks with less than \$500 million in assets which were not agricultural by the FRB definition.									

Sources: Johnson, James, Emanuel Mellicher, and C. Edward Hershberger, "Financial Condition of the Farm Sector and Financial Institutions," paper presented at the symposium on Financial Stress in Agriculture Issues and Implications, Kansas City, MO., Nov. 24, 1986, and calculated from the Report of Condition and Report of Income files, Board of Governors of the Federal Reserve System.

Table 3. Commercial bank real estate lending by type of bank, June 30, 1991

Bank group	RE loans to RE to nonperf. total nonperf. banks 3/			No.
	Commercial banks	loans 1/	loans	
			percent	
All	12,081	40.7	4.89	4.05
Agricultural	4,077	41.6	1.87	1.90
Small nonagricultural	7,384	55.2	2.22	54.3
Urban	5,459	39.7	5.35	49.1
Rural	6,622	49.3	1.76	47.4
Large nonagricultural	620	37.0	6.04	48.6
				13

1/ RE = real estate. 2/ Nonperf. = nonperforming; 90 days past due and still accruing interest plus nonaccrual. 3/ Week banks are banks with total nonperforming loans in excess of total capital.

Source: Reports of Condition and Income files, Board of Governors of the Federal Reserve System.

Table 4. Banks reporting nonperforming loans greater than capital, 1983-91 1/

Date 2/	Agricultural banks		Nonagricultural banks		Total banks	
	Number	(%)	Number	(%)	Number	(%)
1983	40	(0.78)	102	(1.10)	142	(0.94)
1984	93	(1.06)	94	(1.00)	187	(1.30)
1985	141	(2.91)	130	(1.38)	273	(1.91)
1986	158	(3.38)	230	(2.47)	388	(2.77)
1987	84	(1.88)	241	(2.87)	325	(2.41)
1988	34	(1.25)	236	(2.78)	292	(2.30)
1989	11	(0.17)	181	(2.18)	192	(1.64)
1990	13	(0.32)	116	(1.58)	129	(1.17)
1991	15	(0.37)	118	(1.42)	129	(1.07)

1/ Loans past due 90 days or more and still accruing interest plus loans in nonaccrual status are considered nonperforming. Total capital includes total equity capital plus allowance for loan and lease losses plus minority interest in consolidated subsidiaries plus mandatory convertible debt plus subordinated notes and debentures.

2/ The 1991 numbers are as of June 30, all others are December 31.

Source: Calculated from the Reports of Condition and Income files, Board of Governors of the Federal Reserve System.

Table 5. Commercial bank failures, 1980-91

Year	Agricultural		Nonagricultural		Total 3/	
	Number	(%)	Number	(%)	Number	(%)
1980	0	(0.00)	10	(0.11)	10	(0.07)
1981	1	(0.01)	2	(0.02)	3	(0.02)
1982	10	(0.18)	23	(0.25)	33	(0.23)
1983	7	(0.14)	37	(0.40)	44	(0.31)
1984	31	(0.62)	47	(0.50)	78	(0.55)
1985	89	(1.42)	40	(0.42)	129	(0.92)
1986	88	(1.41)	76	(0.84)	164	(1.03)
1987	75	(1.67)	127	(1.41)	202	(1.50)
1988	41	(0.85)	180	(2.00)	221	(1.71)
1989	22	(0.53)	184	(2.18)	206	(1.63)
1990	18	(0.44)	141	(1.78)	159	(1.30)
1991 3/	5	n.e.	51	n.e.	56	n.e.
Total	345	n.e.	923	n.e.	1268	n.e.

3/ Totals exclude mutual savings banks, savings and loan associations, commercial banks not insured by the FDIC, and banks headquartered in U.S. possessions and territories. Failures are those declared insolvent and closed by their chartering authorities plus those granted open bank assistance by the FDIC.

2/ Failures as a percent of total banks of this type.

3/ Through June 30, 1991.

Source: Calculated from information provided by the Federal Deposit Insurance Corporation and the Reports of Condition and Income files, Board of Governors of the Federal Reserve System.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture

Washington, D.C. 20250-3900



Outlook '92

For Release: December 4, 1991

STATUS OF FMHA FARMER PROGRAMS

Glenn J. Hertzler, Jr.
Assistant Administrator, Farmer Programs
Farmer Home Administration, USDA

We are committed to meeting the expectation of internal and external customers in an environment of trust, teamwork, and respect for individuals.

Farmers Home Administration's share of the Nation's farm debt continues to decline. The Agency held 12.3 percent of the total farm debt on December 31, 1990; a decrease of 4.4 percent since the high point which was in 1985. During the 1991 lending season, insured loan obligations declined by 31 percent over 1990. Applications received declined by a similar amount.

The Agency now has a portfolio of 169,748 insured loan borrowers who owe \$21,941,125,810. Borrowers who are behind schedule on their payments owe \$11,345,233,901 of which \$5,850,000,000 is delinquent.

In addition to the insured loan portfolio, the Agency has placed guarantees on \$4,526,570,458. These loans are held by approximately 35,000 farmers doing business with over 10,000 commercial lenders. The guaranteed loan program has shown strong and steady growth in the last five years. Guaranteed loans make up nearly 19 percent of the total portfolio, an increase of 12 percent in the past five years. In the lending season just completed, 72 percent of the loan funds obligated were guaranteed loans.

The Agency will continue to place heavy emphasis on guaranteed loans. There are several reasons for this continuing effort. The most significant is the substantially lower cost of that program as compared to the insured loan program. The percent of delinquent dollars in the guaranteed loan program is 1.31 percent of principal outstanding as compared to 32 percent in the insured program. It must be recognized that the high delinquency in the insured program is partly due to carry-over of debt from the early 1980's, but delinquency remains extremely high and continues to creep even though we have written off nearly

\$6,000,000,000. In addition to the lower costs of the guaranteed loan program, it's existence helps rural lenders continue to serve not only farmers who are on the edge of the lenders loan standards, but helps keep those lenders healthy and active in rural communities.

The Agency continues with an aggressive debt restructuring program. Since enactment of the Agricultural Credit Act of 1987, 30,792 borrowers have had their loans rescheduled, 7,523 have had their debts written down and another 8,018 have had their debt written off. This program continues as we work with another 46,333 borrowers who are behind schedule. This includes 452 borrowers with court action pending, 5,005 with bankruptcy action pending, 7,773 with foreclosure action pending, 6,020 with confirmed bankruptcy plans or other debt settlement agreement and another 1,706 in collection only status.

Along with the intensive debt restructuring program, we have acquired and disposed of a large number of farms which served as collateral. Since enactment of the Agricultural Credit Act of 1987, we have acquired 4,016 farms and have disposed of 5,068. We expect inventory farms to be a major part of our activity for several years as we work through the complicated and expensive process of acquiring, managing, and disposing of this property.

What is the outlook for FmHA? That can be seen in the make up of the obligations made in the 1991 lending season. Nearly 38 percent of the insured loan obligations were to new borrowers. This indicates a continuing need for a lender of last resort.

Our direction has been set. Our mission statement clearly sets forth our intent. We are focusing our resources on our original charter of providing temporary, supervised credit, in moderate amounts. We expect a continued growth in the guaranteed loan program and at the same time, will provide special assistance in the form of supervised credit to those unable to get credit with a guarantee. We will continue to offer a variety of debt restructuring options to those who find themselves in severe financial difficulty. We have just completed a very intensive training program in Credit and Financial Analysis to over 4,200 loan officers so that we can be more effective in providing supervised credit. Our objective is helping borrowers overcome their financial difficulty and become successfully established in agriculture. We graduated over 12,000 borrowers this past year; a very positive indication that we can make the difference.

We are also continuing our very successful outreach program to provide farm ownership opportunities to socially disadvantaged farmers. Since 1988, we have helped over 666 socially disadvantaged families acquire farms. In addition, we have 16 cooperative agreements with 1890 Land Grant Universities to

provide special training to 1,053 small farmers in farm management and alternative farming enterprises.

Several major initiatives to improve the success rate of FmHA borrowers were given to the Agency in the 1990 FACT Act. These initiatives are borrower training, training of FmHA loan officers, market placement, and loan assessment. Borrower training requires that FmHA borrowers must participate in training programs related to financial and farm management concepts as a condition to receiving benefits from the Agency's farm programs. Market placement is a program to help farmers get guaranteed loans. Loan assessment is the development of a business plan and an assessment of the risks and resources needed to assure success of the operation, prior to extending any credit. These FACT Act initiatives direct the Agency to use supervised credit to increase the borrower's success.

In summary, FmHA is maintaining an aggressive effort to assist those farmers who need special assistance in obtaining credit. We will first try to provide that assistance with loan guarantees, and as a last resort, provide assistance with an intensive supervised credit program using insured loans. For those borrowers in our insured portfolio who are in financial stress, we will continue to offer restructuring options with the final workout plan being one that will keep the borrower on the farm provided the Government can recover more of the debt than can be recovered in a liquidation. Beginning and socially disadvantaged farmers will continue to get priority consideration in the purchase of inventory farms along with training to increase their chance for success. All borrowers will receive training including those that are obtaining credit through the guaranteed loan program.



Outlook '92

For Release: Wednesday, December 4, 1991

FARM CREDIT SYSTEM OUTLOOK

Robert N. Collender
Financial Economist, Economic Research Service, USDA

Overview

After a decade of adversity, the Farm Credit System (FCS) enters 1992 in increasingly strong financial condition. The size of its loan portfolio and its share of the farm debt market have stabilized. Earnings and earnings quality have improved. Capital levels have been restored. Nonperforming assets, though still unacceptably high, continue to work their way through the portfolio. In short, the last few years of record farm income have not been lost on the FCS.

Recent changes in underwriting practices, management information systems, asset/liability management, accounting, capital standards, other regulations, as well as system structure mean the system is stronger than comparisons with past financial ratios indicate.

Threats to the system's competitive environment have receded. Proposals are dead that would have ended FCS's agency status or require its liabilities to earn Aaa ratings on their own merit, without the benefit of Government sponsorship. Neither Farmer Mac nor bank reform, both of which have the potential to increase competitive pressures on FCS institutions, have had auspicious beginnings.

On the downside, the FCS has yet to attain measurable progress in improving overall cost efficiency, and weaknesses in the cooperative and sector specific nature of the system have not been addressed.

FCS situation continues to improve

After suffering substantial losses in loan volume from 1983 through 1987, the FCS portfolio has stabilized at roughly \$50 billion (figure 1), while its share of the farm loan market has remained between 26 and 28 percent. FCS market share for long-term farm real estate loans has settled at roughly 36 percent, and its short- and intermediate-term portfolio represents a 15 percent market share.

FCS earnings quality (figure 2) steadily improved as the FCS loan portfolio stabilized and the farm sector recovery progressed. FCS income could surpass \$800 million for the current calendar year. Although FCS income reached \$700 million in 1988, reversals in the allowance for loan losses accounted for all but \$20 million. By 1990, however, substantially all net income was from solid operating results led by substantial increases in net interest income. This trend is continuing in 1991. The increase in net interest income stems from a faster decline in the costs of funds than in interest charged on loans and from the decline in nonearning assets.

Capital adequacy has been a major regulatory concern. By midyear 1991, FCS at-risk capital plus loan loss allowances plus the FCS insurance fund stood at \$6.8 billion or 13 percent of loans outstanding. This level is nearly as high as the level of surplus and loan loss reserves in 1985 and is a higher percentage of loans outstanding. However, it remains substantially below the level of reserves plus paid-in capital plus surplus attained in the early eighties (figures 3 and 4). All banks have now attained interim minimum risk-adjusted capital levels, and all but three banks have attained the permanent 7 percent risk-adjusted capital standard that takes effect in 1993.

The trend in asset quality is evident in figure 5. Nonperforming loans (nonaccrual loans plus accrual loans over 90 days past due) decreased substantially from 1985 through 1989 both in dollar terms and as a percent of loans outstanding. This trend has stalled in the past two years for at least two reasons. First, the Farm Credit Administration (FCA), which regulates the FCS, has imposed more conservative standards for classifying nonaccrual loans. The effect of these standards is indicated by the change in the proportion of nonaccrual loans that were current in both interest and principal payments. At yearend 1990 about three-fifths of nonaccrual loans (58 percent) were current compared to less than half (47 percent) at yearend 1989. This statistic indicates that loan quality continues to improve. On the other hand, it is also possible that the remaining nonperforming assets are those that will be the most difficult to work through or liquidate.

Historic comparisons do not, however, tell the whole story of the improvement in the FCS. Policy and regulatory changes have also strengthened the system. These include the reorganization of the FCA as an "arms-length regulator," the adoption of GAAP accounting and outside auditing, uniform and conservative underwriting standards, risk-adjusted capital standards, CAMEL exams (undertaken by FCA examiners rather than district bank employees), much improved asset/liability management and the imposition of constraints on assisted banks through agreements with the FCS assistance corporation.

Threats receding

The past year held remarkable potential for impairing the competitive environment facing Farm Credit Institutions. Congress has considered major legislation to restructure commercial banking and to reform regulation of Government-sponsored enterprises (GSE's) including the FCS. Banking proposals included allowing nationwide branching, removing restrictions on the ownership

of commercial banks, allowing banks to provide insurance and mortgage banking services, and new restrictions on deposit insurance. These proposals had the potential to increase competition substantially in some FCS markets, particularly in States that currently limit branching of commercial banks.

GSE proposals included requiring FCS securities to attain Aaa ratings without the benefit of government sponsorship, forcing consolidation of FCS district banks, establishing credible provisions for repayment of Assistance Corporation debt, and requiring FCS variable interest rate loans to be pegged to an interest rate index beyond the control of FCS management. If enacted these proposals could substantially change some aspects of system management.

The proposal to force the system to attain the highest possible bond rating without relying on its GSE status would be incompatible with its sector specific charter and would have eliminated the FCS as a source of credit to agriculture and rural America. The other proposals would limit management discretion, but ultimately have little impact on the system's ability to compete.

GSE legislation would also authorize Farmer Mac to sell its own securities to finance the proposed, and as yet unsuccessful, secondary market for farm mortgages. Such authorization would add profit potential to liquidity management as a motivation for mortgage originators to participate in the secondary market. The effect may be to enhance bank competitiveness in farm real estate finance. However, it does not give Farmer Mac the ability to shift risk away from mortgage originators, a major function of secondary markets for residential mortgages.

As the year progressed, it became increasingly clear that Congress would decline to make major changes. The exception to this generalization is the issue related to Farmer Mac which is expected to have little effect since Farmer Mac would have no specific competitive advantage over the FCS in cost of funds or operating costs. In addition, an informal secondary market in farm mortgages has developed through trading of mortgages among commercial banks and insurance companies. This informal market will mitigate the impact of the formal market should the latter prove viable.

Clouds on horizon?

The FCS and its borrowers have recovered substantially from the financial turmoil of the last decade. Nevertheless, the future is clouded by uncertainties. Rapidly changing world politics increase the likelihood of demand shocks affecting world agricultural trade—when domestic economic pressures will limit government support. The fall of the communist regimes in Eastern Europe raises short-term questions about the ability of these countries to pay for food imports, and long-term questions about their potential as agricultural exporters.

These uncertainties are occurring at a time when farmers must look to markets for more of their income. The Food, Agriculture, Conservation, and Trade Act

of 1990 changes commodity programs by reducing acreage eligible for farm program payments. Current constraints on the federal budget, preclude the kind of broad, unfocused aid directed at the sector during past difficulties.

For farm lenders, these changes may mean heightened risks that individual borrowers will experience extremely low income in any given year. This year's experiences in the Dairy sector are a case in point. To counteract this possibility prudent lenders will tighten underwriting standards, as many FCS associations have done.

System efficiency needs attention

One consequence of the turmoil of the past decade has been the on-going restructuring of the FCS. The 1987 Act mandated that the existing Federal Intermediate Credit Banks and Federal Land Banks in each of the 12 farm credit districts merge into one consolidated Farm Credit Bank (FCB). In addition, associations and Banks for Cooperatives (BC's) were encouraged to merge voluntarily.

Even before the consolidations mandated by the 1987 Act, many mergers and consolidations were taking place among Federal Land Bank Associations (FLBA's) and Production Credit Associations (PCA's) within districts. In 1980, there were 915 FCS associations including 491 FLBA's and 424 PCA's. By the end of 1987, after 2 years of unprecedented financial pressure, there were 390 associations including 231 FLBA's and 159 PCA's. Since passage of the act, the number of associations has fallen to 258 including 89 FLBA's, 77 PCA's, 70 Agricultural Credit Associations (ACA's) created from horizontal mergers of PCA's with FLBA's, and 22 Federal Land Credit Associations (FLCA's) created by transferring lending authority and downloading existing long-term loans from FCB's. Ten of the district Banks for Cooperatives merged with the Central Bank for Cooperatives to form COBANK.

Despite all this restructuring, the FCS has been unable to improve overall operating efficiency as figure 6 illustrates. Overall operating costs per dollar loaned increased as the loan portfolio shrank and deteriorated in the mid-1980's. In contrast, the BC's have managed to lower per dollar operating costs by about 25 basis points over the same period (figure 7). ERS research has shown that the FCB mergers did not result in immediate gains in operating efficiency (1, 2) and that considerable economies of scale at the association level remain unexploited (3, 4).

In an effort to duplicate some of the efficiency gains enjoyed by the BC's, the St. Louis and St. Paul districts are planning to complete the first voluntary merger of farm credit districts on July 1, 1992. Aggressively pursuing possible gains in operating efficiency could significantly enhance the FCS's competitive position.

Conclusion

The agricultural recession, subsequent rescue, and continuing restructuring of the FCS have left the system financially stronger and more sophisticated than at any time in recent memory. The best FCS institutions can out-compete and overcome anything on the near-term horizon, including lower farm income, changes in the competitive banking environment and restructuring of Farmer Mac, if they continue to adhere to prudent lending practices and take every reasonable opportunity to reduce risk.

On the down side, the FCS has not aggressively reduced operating costs and continues to carry an uncomfortably large percentage of high-risk assets. Conflicts and limitations inherent in the system's cooperative structure and sector specific charter have yet to be adequately addressed.

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Figure 1--FCS loan volume, by loan type

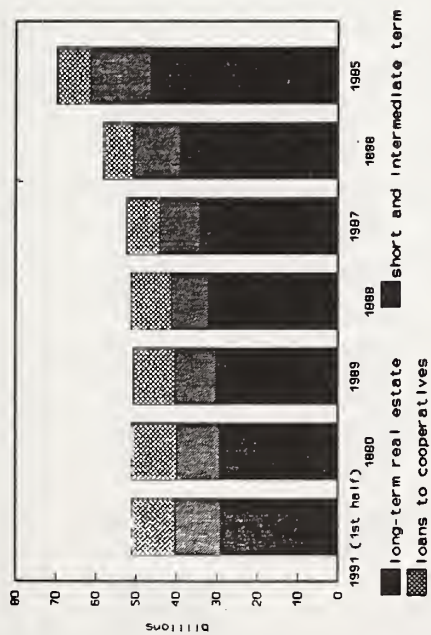


Figure 3--FCS Capital and Reserves

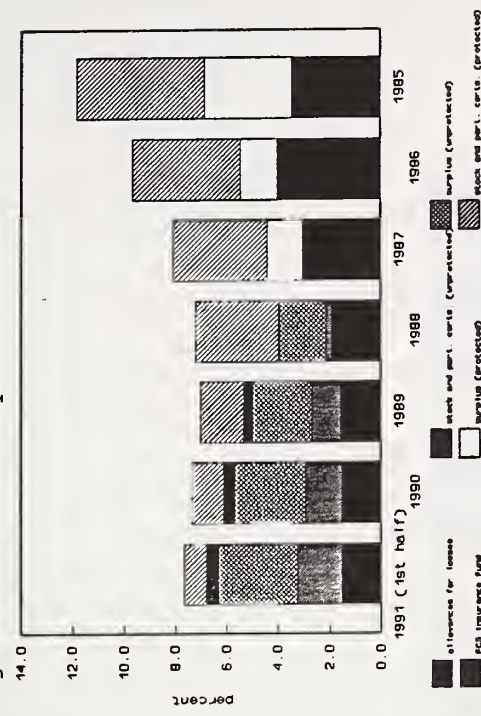


Figure 2--FCS income statement items

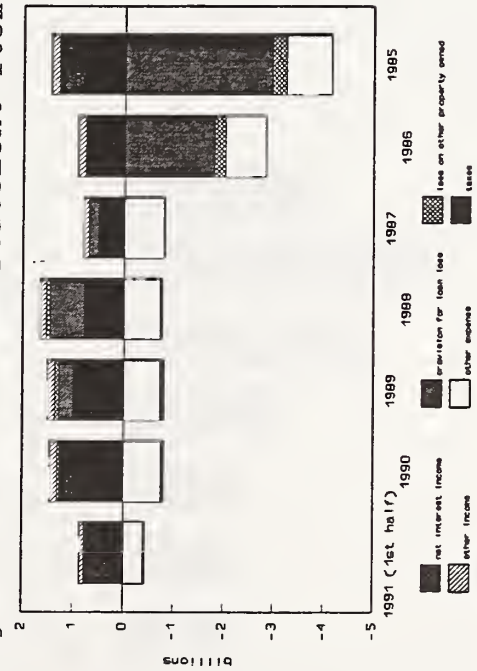


Figure 4--FCS at risk capital per dollar loaned

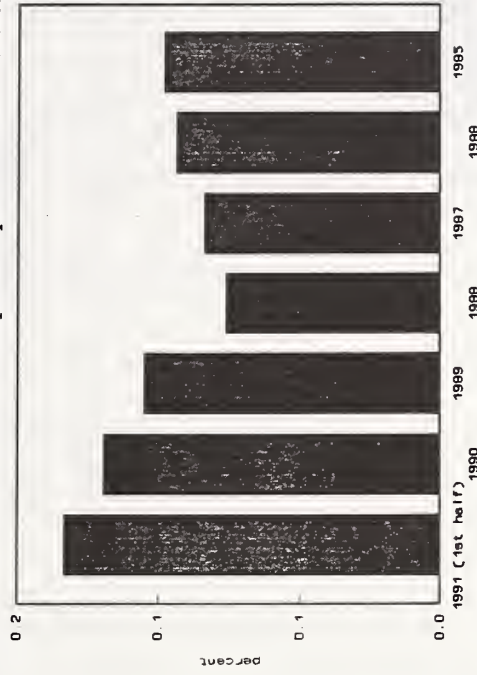


Figure 5--FCS nonperforming loans per dollar loaned

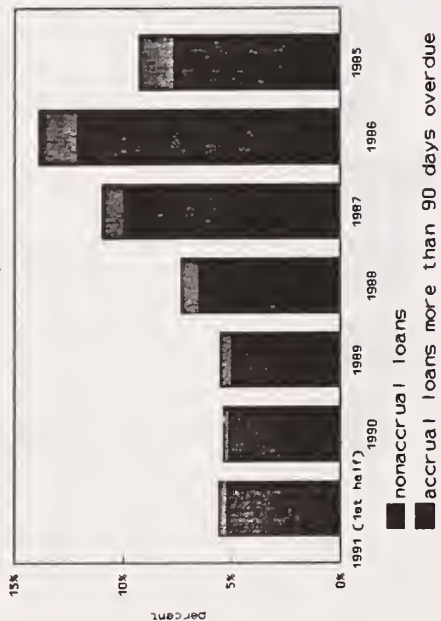


Figure 7--BC Operating expenses per dollar loaned

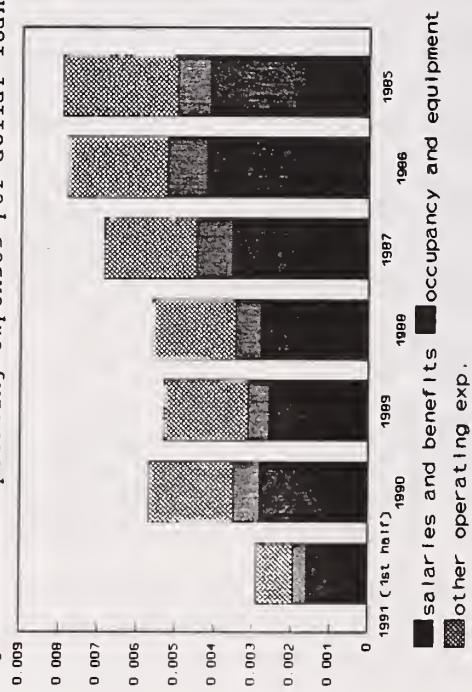
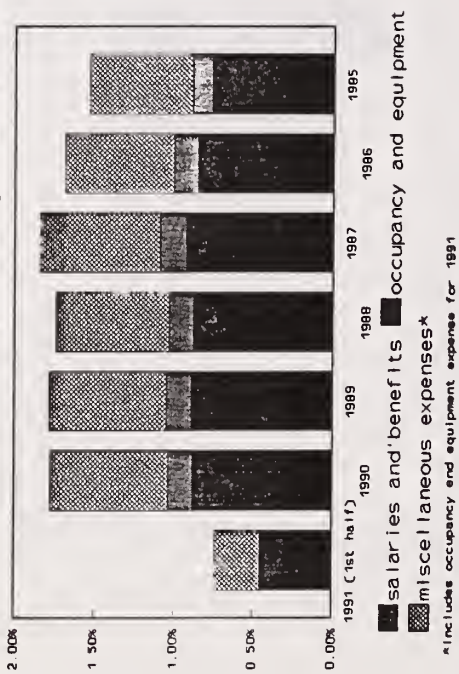


Figure 6--FCS Operating expenses per dollar loaned



*Includes occupancy and equipment expense for 1991

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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Outlook '92

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RESTRUCTURING IN CENTRALLY-PLANNED ECONOMIES AND THE OUTLOOK FOR SUGAR

Ron Lord

Agricultural Economist, Sweeteners Analysis Section
Commodity Economics Division, Economic Research Service
U.S. Department of Agriculture

I will take this opportunity to look, not only at the U.S. and world sugar outlook for the coming year, but at the longer-run impacts on the world sugar market of the amazing events which are happening in formerly centrally-planned economies.

US Sweetener Outlook

U.S. sugar production for fiscal 1991/92 is forecast by USDA at 7.325 million short tons, raw value,¹ down slightly from our September forecast, but up 400,000 tons, or 6 percent from the last year (Fig. 1). The 3 previous crops were all affected by weather problems of one sort or another, and yet in all 3 years, sugar production was still above 6.5 million tons, higher than any year prior to 1986 with the exception of 1975. Total U.S. sugar production appears to be on an upward trend.

Beet sugar production in 1991/92 is forecast at 3.925 million short tons, of which 125,000 tons is forecast to be produced from the desugaring of molasses (Fig. 2). For 1991/92 beet harvested acreage is up about .7 percent to 1.386 million acres, and yields are forecast up slightly at 20.3 tons per acre. Last year's beet sugar production was 3.855 million tons.

Cane sugar production in 1991/92 is forecast at 3.4 million tons, up about 250,000 tons from last year (Fig. 3). This is down 50,000 tons from the September forecast. Louisiana is forecast up almost 350,000 tons from the prior freeze-damaged crop, while Florida is forecast at 1.775 million tons, off about 30,000 tons. It would be very difficult to duplicate last years' record-breaking conditions even with slightly higher acreage. Hawaii is forecast at 750,000 tons, continuing a decline which began about a decade ago.

The declining trend in U.S. sugar consumption of the decade prior to 1986 has been decisively reversed (Fig. 4). From the low point, 7.794 million tons in 1985/86, consumption rose by about a million tons in 5 years to 8.773 million

¹ Volumes are in raw value, unless otherwise noted.

tons last year, an average increase of 2.5 percent a year. Annual per capita sugar consumption has risen in the last 5 years from about 60 to about 65 pounds, an average annual increase of about 1.7 percent. The percent increase in sugar consumption has exceeded that of HFCS consumption the last two years. Whether this trend will continue or not will depend upon many factors, including :

- o The public image of sugar compared to other basic foods, such as fats and oils, in an increasingly health-conscious society.
- o Eating trends in the American diet, such as the popularity of sweet as opposed to salty snacks, and the increasing accessibility of sweet snacks at points of purchase.
- o The pace of development of price-competitive substitute sweeteners with characteristics similar to sugar, which might include both caloric and low-calorie sweeteners.

Sugar consumption in fiscal 1990/91 was buoyed by the Gulf war and spot shortages of HFCS. As we don't expect a reoccurrence of these events, USDA is forecasting fiscal 1991/92 consumption to rise 1.7 percent, slightly below the 5-year trend increase of 2.5 percent, to 8.925 million tons.

USDA's forecast of ending stocks on September 30, 1992 is 1.434 million tons (Fig. 5). This is below last year's ending stock level of 1.513 million tons, and, if realized, would result in a stocks-to-total-use ratio of 15.25 percent, slightly below last year's 16.03 percent.

The U.S. raw sugar price was above 23 cents for 6 consecutive quarters in 1989 and 1990, but has fallen to a range of 21.25 to 21.75 cents a pound during the last 3 quarters (Fig. 6). The market has been relatively steady this year, with few events causing big price moves. Barring any major shocks, and if USDA forecasts for the coming year hold up, the recent price pattern may continue into next year.

The Midwest wholesale price for refined beet sugar has come down from levels above 30 cents (list) for most of 1990 to the 25-cent range in 1991 (Fig. 7). The list price of HFCS-55 was actually above that of refined sugar during several months this last summer. Lower raw sugar prices and prospects of a larger volume of beet sugar undoubtedly contributed to declining beet sugar prices.

HFCS use is forecast at 6.225 million tons for 1991, about 1.6 percent above last year's 6.125 million tons (Fig. 8). Most HFCS trade is with Canada. Until 1989, trade was almost entirely Canadian exports into the U.S. Rising Canadian sugar prices in 1990 stimulated Canadian use of HFCS, reducing availability of exports to the U.S. and even drawing some U.S. HFCS into Canada. It should be noted that the existence of discrepancies between different sources of HFCS data reduces the reliability of these figures.

World Sugar Market

Turning to the world market, I want to first review USDA's forecasting record for the 1990/91 crop (Fig. 9). (Note that USDA numbers for world sugar are in metric tons, raw value.) The first forecast was in May 1990, and saw a world balance deficit of about 2.3 million tons. At the time, the world price was

above 15 cents. At last year's Outlook conference, our numbers showed a much smaller deficit of 400,000 tons, and the price was then about 10 cents. Now, we estimate that there was, in fact, a surplus of 3.6 million tons; prices in the last year have at times sunk below 8 cents. For the 1990/91 year, the shift in the balance from the first forecast to final numbers was about 6 million tons from the deficit to the surplus side.

Now I turn to 1991/92 (Fig. 10). A big production story is the drop in EC production from 17 million tons last year to about 15.5 million tons this year, due to reductions in area and yield in France, and weather problems in other countries. Among other larger producers, increases in production are expected in India, up 400,000 tons; Brazil, 600,000 tons; the U.S., 400,000 tons; China, 350,000 tons; and Thailand, almost 500,000 tons. Declines are expected in the USSR, 500,000 tons; Cuba, 300,000 tons; Australia, 370,000 tons; and Mexico, 150,000 tons. Overall world production is expected to fall from last year by less than half a percent, from 113 to 112.6 million tons.

Among major sugar consumers, only the Soviet Union is forecast for a significant consumption decline of 300,000 tons, from 13.6 to 13.3 million tons. The largest consumption increases are forecast in India, up over 600,000 tons; Brazil, up 250,000 tons; the U.S., up 140,000 tons. Mexico, China, Indonesia, Pakistan, the Philippines and Iraq are all forecast up about 100,000 tons. Overall, world consumption is forecast up about 2 and a half million tons, an increase of 2.2 percent.

The big story this year revolves around events in the (former) Soviet Union and adjacent countries, as well as Cuba. Events in these countries will have a great impact on the world sugar market, and present the greatest uncertainties for forecasters. Will there be a significant further deterioration in the economy of the Soviet Union, which would further reduce sugar consumption, production, or both? If a new war breaks out somewhere, would sugar demand be affected? And how much will the Middle East demand pick up in the aftermath of the Gulf war? Cuba faces shortages of petroleum, fertilizers, and spare parts, as well as increasing exposure to the world price. Cuba also faces the necessity of seeking out new markets as its trade shifts to a hard-currency, market-oriented basis.

The world raw sugar price (Contract No. 11, New York) rose from about 4 cents in 1984/85 to average almost 14 cents in 1989/90, as the world stocks-to-use ratio fell from almost 30 percent to under 18 percent (Fig. 11). Note USDA ending stocks are as of the end of each country's crop year, and not measured at one particular point in time. When the stocks-to-use level rose for the first time in recent years in 1990/91, the price fell back to average just over 8 cents a pound. The USDA forecast for 1991/92 is for almost no change in the stocks-to-use ratio, and for an addition to world sugar stocks of 800,000 tons.

Our 1991/92 world balance forecast in May was for a surplus of 1.2 million tons (Fig. 12). The balance forecast in September was almost unchanged from May at 1.1 million tons. Even as the forecast surplus has shrunk to the current 800,000 tons, world sugar prices have strengthened somewhat from lows in the second quarter of 1991 (Fig. 13). Given current production and consumption forecasts, and if there are no large shocks, the world price should stay roughly within its range of the last 6 months for the remainder of

the marketing year.

Long-Run Impacts of Restructuring of Formerly Centrally-Planned Economies

The formerly centrally-planned economies are undergoing profound changes. For this discussion, the group includes Poland, Hungary and Czechoslovakia (now the Czech and Slovak Federal Republics, or CSFR); the USSR (statistically, this still includes the former Republics of Lithuania, Latvia and Estonia); and Bulgaria, Romania, Yugoslavia and Albania. Sorting out the implications of such radical changes for the world sugar market is difficult, particularly until the actual direction of economic policy in each country is revealed, and some stability arises out of the current chaotic pace of change. However, I will attempt to trace some implications of this "restructuring" on the world sugar market, not in the short run, but over a longer run of 5-10 years.

I was privileged to spend two weeks in Poland recently, and will briefly describe Poland's sugar industry to give you a feel for one country in the region. Poland's 78 sugarbeet factories produce about 1 1/2 to 2 million tons of sugar a year. In the U.S., about half as many factories produce twice as much sugar. Most of Poland's factories were built before World War II, and are small and inefficient; sugar recovery losses are about twice as high as in neighboring countries of Western Europe.

Poland has between 350,000 and 400,000 sugarbeet farmers. Average total farm size is about 7 hectares (17 acres), and average sugarbeet area is about 1 hectare (2.5 acres). The typical farm still uses horses for field work and harvests beets by hand. Most farms are privately held, so that Poland does not face as big a task of breaking up State farms as some of the other Eastern European countries. Most farms are composed of several small parcels of land spread around a small village, and travelling between parcels increases field costs.

There is now no minimum price for sugarbeets, and some factories are having difficulty persuading farmers to grow beets; some beet farmer organizations have protested against low sugarbeet prices. In some regions, factories now have to compete against each other for beets, resulting in beets being transported much further than necessary and some factories running below capacity.

I visited a Polish sugarbeet factory, which last year produced 50,000 tons of sugar. It receives beets from about 15,000 farmers, almost twice the number of sugarbeet farmers in the entire U.S. Up to now there has been no feasible way for the factory to pay farmers on the basis of quality, but only for quantity: thus farmers have little incentive to improve sucrose content or engage in more efficient management practices. Factory managers are busy attempting to raise efficiency as rapidly as they can, but face some very large hurdles.

As of January 1, 1990, Poland embarked on a "big bang" move toward a market economy. Prices were liberalized and sky-rocketed, and the exchange rate was allowed to float. The retail price of sugar had been fixed for decades at 10.5 zlotys per kilogram until the early 1980s, and then had slowly risen to a (fixed) price of 165 zlotys by 1988. Sugar price controls were lifted on August 1, 1989; the 1990 average price rose to 5000 zlotys per kilogram. The

exchange rate also rose: at the current exchange of about 10,000 zlotys per dollar, one kilogram of sugar at retail costs 50 cents (23 cents a pound). The drastic fall in real income in Poland in the last few years has hurt consumption of almost everything, including sugar; the impact of the sugar price rise is not so clear, as it is the relative price which counts.

The sugar factories, which had previously been organized into 11 "groups", were made basically self-governing and broken into individual units. The practice of importing Cuban raw sugar for refining in beet factories, which had been forced on the factories by central planners, has ended. There has been a re-emergence of "sugar banks" which are closely affiliated with the factories. These entities, a form of which existed prior to World War II, seem to provide not only credit but some coordination functions for the factories.

Plans for full "privatization" of the factories were not complete as of a few weeks ago, but the aim is to distribute ownership shares of factories among managers, employees, farmers, the sugar banks, the government, and the public. A Ministry of Transformation is responsible for these arrangements.

It is difficult to characterize Poland's sugar policy, as it is still evolving. In 1990 an Agricultural Marketing Agency was set up, which has provided some intervention price support. Last year, when Poland's 1990/91 sugar crop was unusually large at the same time that consumption was falling, the Agency provided export subsidies for about 500,000 tons of sugar. But the industry apparently cannot count on similar subsidies in the future, as funds are very scarce. Neither the Agency nor any other branch of the Polish government has publicly stated a definitive sugar policy.

The only apparent border measure for sugar which Poland has in place is a tariff on imported sugar, which was recently raised to 40 percent. Suppose that white sugar is available for about 12 cents a pound, fob London (more or less the current price), and transportation costs to Poland are 2 cents a pound. The upper limit on the Polish wholesale price would be 40 percent above that, about 20 cents a pound. If the tariff is, in fact, the only border measure, (one can never be sure, with things changing so rapidly) then the current sugar price in Poland (23 cents a pound, retail) is perhaps already being set by the world market, and Poland would be among the very few countries in the world whose domestic sugar price reflects the world price.

Much of what happens to Polish sugar policy will depend on the new government, just now being formed after elections in late October. In the elections, dozens of parties won substantial votes, and the Communist party came in second to a reformist party. There will be a crush of demands on the new government from all sides, not the least from sugar processors and beet farmers who will press for a "sugar policy".

This portrait of the sugar sector in Poland sets the stage for a consideration of hard decisions which all of these countries will face in the coming months and years with respect to agricultural policy. I want to now examine the choices facing these countries.

Each country's basic political and economic policies lie somewhere on the spectrum between public and private control of resources. This is the

vertical dimension of the diagram (Fig. 14). This is a simplification, of course, and no country will be at either extreme. Likewise, the degree of price intervention can be high or low. The most free-market country would be located in the region of P-L, while the most centrally-planned country would be in the region of G-H. Countries with basically private control of resources, but with price interventions, would be in the area of P-H. Note that a high degree of market price intervention can result in either "high" or "low" prices. I have characterized questions of market price intervention as "GATT Issues", and questions of basic control over resources as "Restructuring Issues".

The countries which have announced intentions to become market economies are starting out from the region of G-H, where they have had public control of resources and a high degree of price intervention (which often meant very low controlled sugar prices). They have announced plans to "restructure" and move toward a system of private control of resources, or to move downward in the diagram. With some exceptions, and with a great deal of uncertainty in the case of the USSR, they seem to be making progress in that direction.

Moves toward less market price intervention, (rightward on the horizontal plane) are far less certain. Free market economics is often more difficult to implement in agriculture than in other sectors of the economy, and perhaps more difficult to implement with sugar than with other agricultural commodities. Poland, CSFR, and Hungary, for example, have declared intentions to move toward private control of resources, but have begun to implement policies which will continue a relatively high degree of government sugar price control. Where will these countries end up?

(Note, that not all of the points below apply to all countries.) The following points would tend to favor a continuation of government market price intervention:

- o There is a history and tradition of sugar price intervention, world-wide, and sugar is often a key commodity politically; countries seem to want to be self-sufficient in sugar.
- o Continuing sugar price intervention requires a smaller, less-drastic change from the status quo.
- o There will be very strong lobbies for price intervention, and very weak lobbies against. (Note: here, there is a presumption that price intervention raises producer price, not lowers it.)
- o Agriculture is considered unique, and not something to be left to the vagaries of the market; perceptions of food security can result in very powerful political forces.
- o Many of these countries will want to join the EC. They may perceive that implementing an "EC-style" sugar policy would make an eventual union easier.
- o Unemployment is a very big issue, especially in the immediate short-run period following a "big bang" transformation towards a market economy. This illustrates the short-run "Machiavellian" imperative, which can

result in high long-run costs. Price intervention could mean the difference between success and failure for many sugar factories and farms in the next few years.

The following forces would tend to favor a lower degree of market price intervention:

- o There have been announcements from some of the governments that, in principal, they favor allowing markets to set prices: call this the "philosophical" imperative.
- o Other industries and sectors are facing the whirlwind of competition, especially from overseas; sugar producers may not succeed in justifying why they should get unique treatment.
- o Budget constraints will be severe, reducing government price support options (although using border measures and forcing consumers to pay for producer support would still be an option).

My own guess is that the former centrally-planned economies will opt for sugar regimes which will involve a rather high degree of price intervention, which would move them into the same corner as most countries of the world with regard to sugar policy. This scenario implies relatively high, stable sugar prices, and attendant low risks for capital investment. If risks in other sectors remain high, perhaps due to less border protection, the relative profitability of sugar would rise.

What is the scope for improvements in sugar production efficiencies? The 1988-90 average sugarbeet yield was 26.7 tons per hectare in the USSR, 35.4 tons per hectare in Poland, and 51.6 tons per hectare in Denmark, which is close to the average for the EC (Fig. 15). These differences cannot be fully accounted for solely by soils and climate. During the same period the recovery rate of sugar per ton of sugarbeets was 10.4 percent in the USSR, 13 percent in Poland, and 16.1 percent in Denmark.

Suppose that countries such as Poland and the USSR could, over a period of 5-10 years, bring their yield per hectare and factory recovery rates halfway up to the levels achieved in Denmark. With unchanged acreage, Poland's sugar output would increase from 1.96 to 2.7 million tons, a 38 percent increase (Fig. 16). Sugar production in the USSR would rise from 9.3 to 17.3 million tons, a staggering 8-million-ton (87 percent) increase.

Can yields and recovery rates improve without massive capital investments? I think the answer is, yes. For example, most Polish farms do not have good communications, and are small. Better communications alone would help spread improved practices and technologies. Within a very few years there will likely be improved management practices, forced on the farmers by factories struggling harder than ever to reduce costs. Western technology is already moving into Eastern Europe at a rapid pace. And over time, the average farm size will no doubt grow. The restructuring of the economy will put pressure on all resource owners to improve efficiency or fail.

In fact, only modest amounts of capital investment will be required to make the first strides toward substantial improvements in both the field and the

factory. Rationalization which reduced the number of factories and farms would probably contribute to increased sugar output. Efficiency gains will continue to be made in the Western countries, presenting a moving target for others trying to catch up.

What about sugar consumption? If Western-style price intervention becomes the norm, the relative price of sugar will rise in most countries, as it was commonly held down by price controls. Since per capita sugar consumption in these countries is already well above the world average, and even above Western levels, it seems likely that sugar consumption growth will slow or perhaps even stagnate. In time, low calorie sweeteners, at present hardly used, may also become more popular.

This combination of rising production and stagnating consumption in a significant part of the world would, other things equal, tend to put downward pressure on the world sugar price.

Other things may not, of course, stay the same. For example, GATT negotiations are continuing. Reductions in sugar price supports, such as are currently being considered in the GATT negotiations, would result in consumers and producers around the world being exposed to the results of changes in supply and demand, more of the time. Such reductions in price support, if they come to pass and are in fact faced by a significant share of world sugar consumers and producers, would be an offset to the downward pressure on the world price mentioned above. The world sugar price would also become less volatile.

In the last few years, many formerly centrally-planned economies have moved toward political freedom and economic openness at a breathtaking pace. By and large, the political changes have been in the direction of the political systems of the Western democracies. I believe that these have been very positive developments.

However, if these countries adopt the Western model for their sugar policies, production efficiency and incentives will rise and consumption will be inhibited, but most important, the world sugar price will be no closer to being driven primarily by market signals than it was before restructuring.

Figure 1

U.S. Sugar Production and Consumption, Fiscal Years

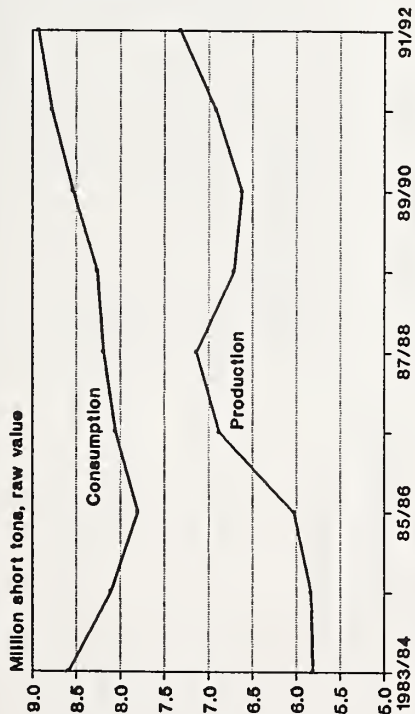


Figure 2

U.S. Beet Sugar Production, Fiscal Years

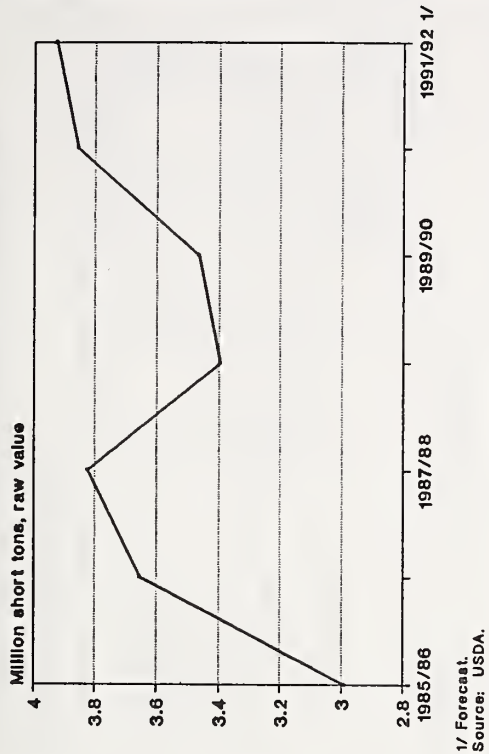


Figure 3

U.S. Cane Sugar Production, Fiscal Years

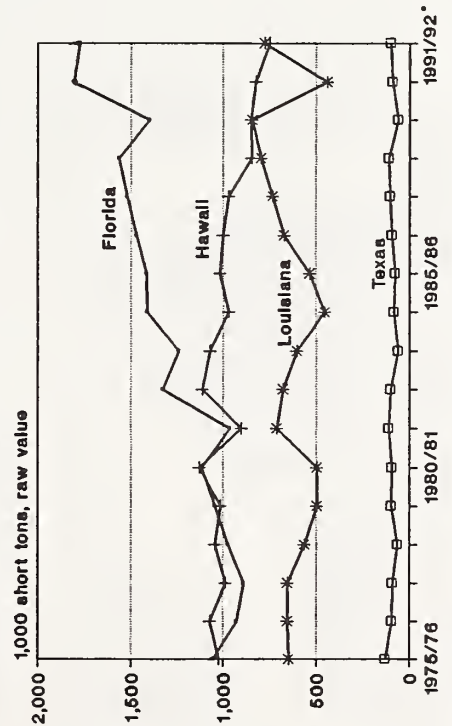


Figure 4

U.S. Sugar Consumption, Fiscal Years*

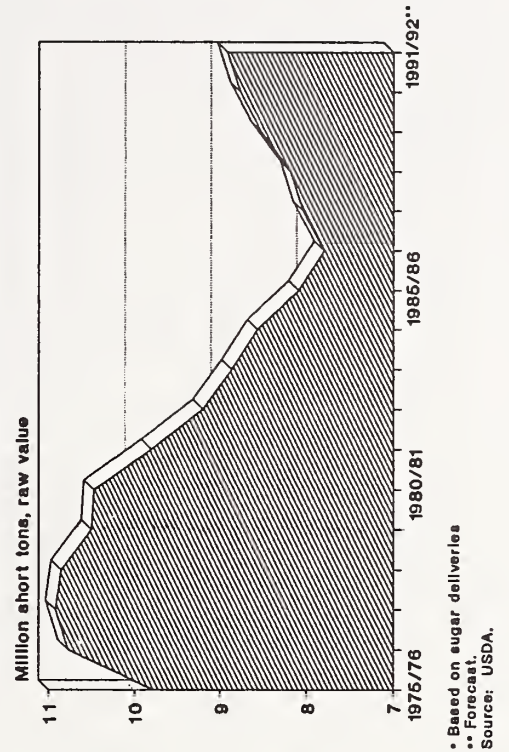


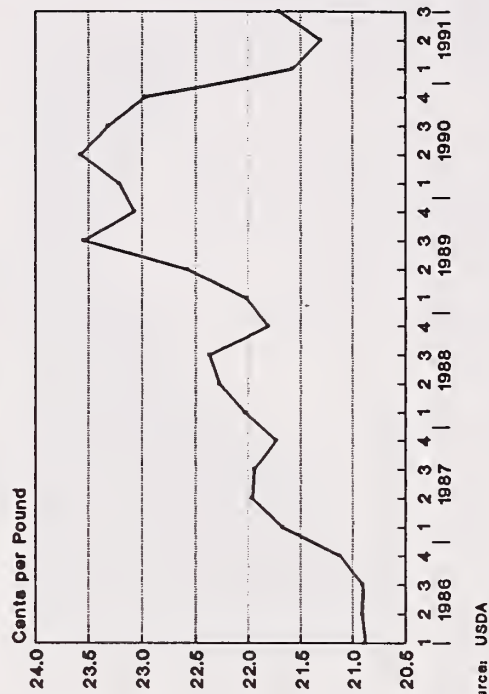
Figure 6

Selected U.S. Sugar Statistics, Fiscal Years

Description	1989/90	1990/91	Forecast 1991/92
1,000 short tons, raw value			
Production	6,623	6,915	7,326
Quota Imports	1,950	2,298	1,527
Deliveries	8,531	8,773	8,925
Ending stocks	1,210	1,513	1,434
Stocks-to-use ratio	13.15	16.03	15.25

Figure 6

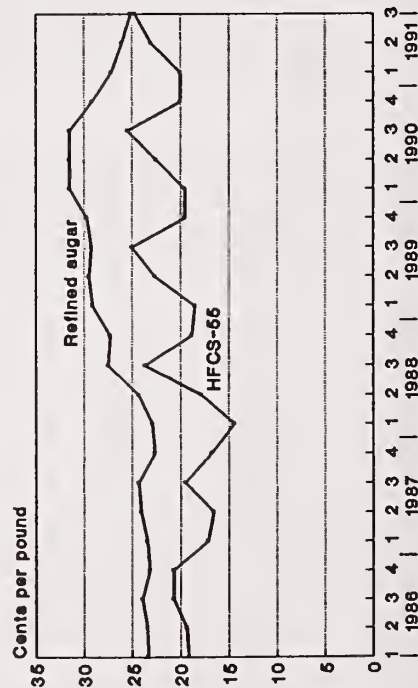
U.S. (#14) Raw Sugar Prices, Quarterly



Source: USDA

Figure 7

HFCS-55 and Wholesale Refined Sugar Prices, Quarterly



Source: Milling and Baking News.

Figure 8

U.S. Key HFCS Variables

Description	1985	1990	Estimate 1991	Forecast 1992
1,000 short tons, dry basis				
Production	5,213	6,183	6,300	6,425
Imports	185	157	150	140
Exports	20	116	110	150
Total food use	5,275	6,126	6,225	6,360

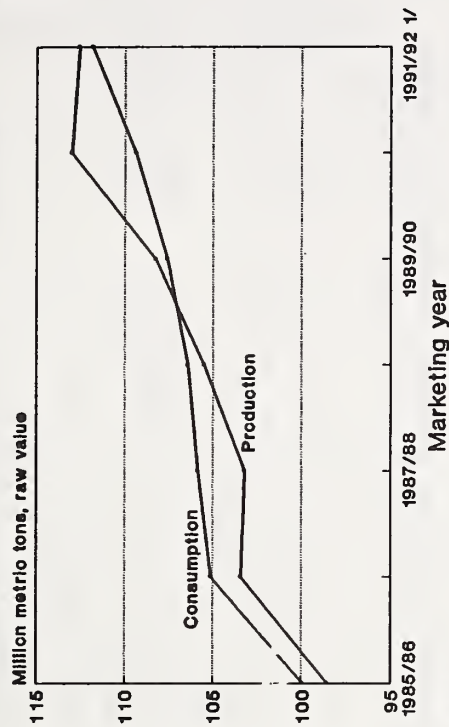
Sources: Bureau of the Census and ERS, USDA.

Figure 9

USDA Forecasts of 1990/91 World Sugar Balance

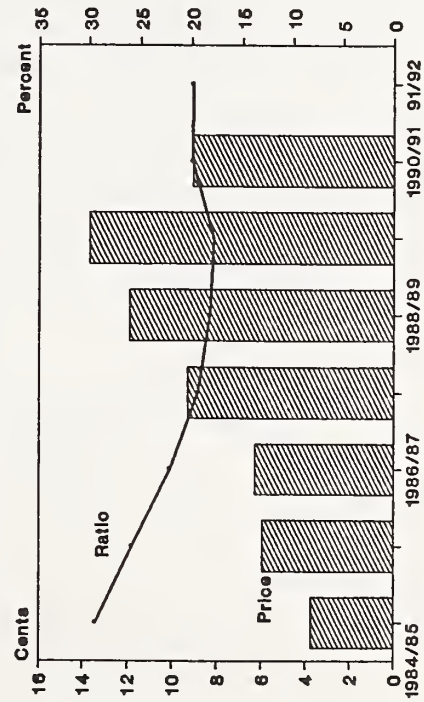
Date	Production	Consumption	Balance
May '90	107.2	109.5	-2.3
Nov. '90	109.9	110.3	-0.4
Sept. '91	112.8	109.3	3.5
Nov. '91	113.0	109.4	3.6

Figure 10

World Sugar Production and Consumption

1/ Forecast.
Source: USDA.

Figure 11

Annual Average World Price and Stocks-to-Use Ratio

Source: USDA.

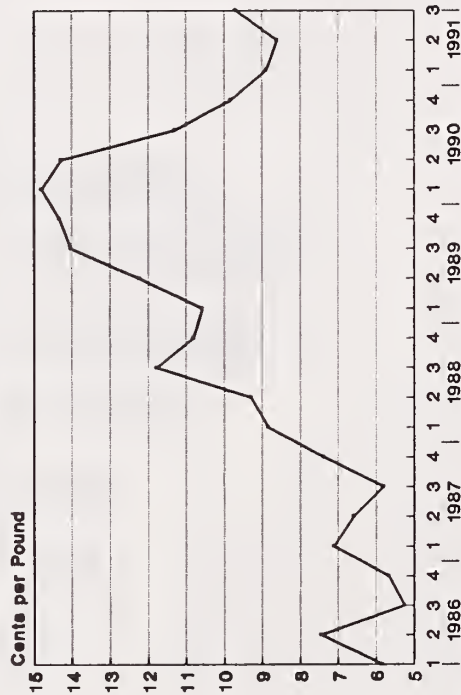
Figure 12

USDA forecasts of 1991/92 world sugar balance

Date	Production	Consumption	Balance
May '91	112.6	111.4	1.2
Sept. '91	113.2	112.1	1.1
Nov. '91	112.6	111.8	0.8

Figure 13

World (#11)Raw Sugar Prices, Quarterly



Source: USDA

Figure 14

Fundamental economic policy choices

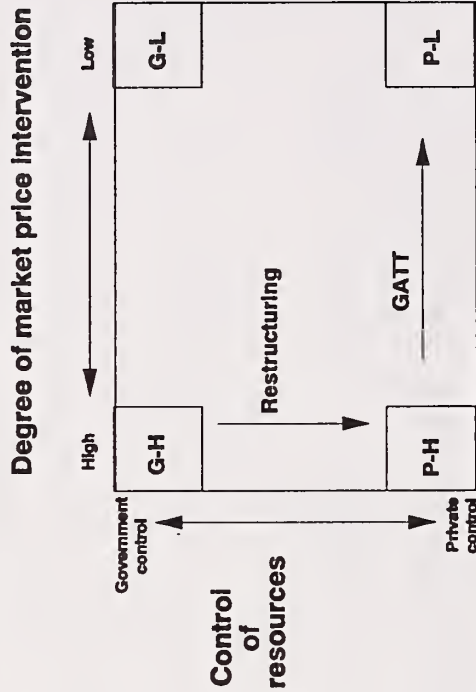


Figure 16

Sugar Projections if Yields and Recovery Rates Rise Halfway Towards the Level of Denmark

Description	Unit	Poland	USSR
Area harvested	1,000 hectares	425	3,334
Yield	Tons/hectare	43.50	39.15
Sugarbeet production	Million tons	18.5	130.5
Recovery rate	Percent	14.55	13.25
Sugar production	Million tons	2.7	17.3
Sugar production increase over 1988-90 average:	Percent	38	87
	Tons	0.74	8.0

Figure 15

Sugar yields and recovery rates

Description	Unit	Denmark	Poland	USSR
Area harvested	1,000 ha.	67	425	3,334
Yield	Mt/ha.	51.6	35.4	26.7
Recovery rate	Percent	16.1	13.0	10.4
Sugar per ha.	Mt/ha.	8.3	4.6	2.8

* 1988-90 average

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OUTLOOK '92 Sweeteners Session December 4, 1991

WORLD VIEW ON SUGAR TRADE AND PRICES

A. C. Hannah

Head, Economics & Statistics Division

International Sugar Organization*

Will 1991/92 go into the history books, if such things exist for our commodity? Sugar analysts face the dangerous temptation of habitually identifying "turning points" or "pivotal years." With the benefit of hindsight it is easy to do this for the past. Looking at the post World War II sugar market a number of shocks which had significant immediate and delayed effects can be identified:- the Korean War price boom, the Cuban Revolution, the 1974-75 price boom and the one that followed it 1980/81. Several of these events diverted established trade flows - Cuban exports to the US were redirected to Eastern Europe, the Soviet Union and China from 1960; the 1974-75 and 1980/81 price booms indirectly led to the severe reduction in US imports and contributed to the sharp rise in production and exports from the EEC.

Of course, not all turning points are the result of tumultuous political or economic developments outside the sugar market. For example, the significant year of 1987/88, when the huge surplus built up in the mid-1980s began to be eaten into, was an important turning point, culminating briefly in 15 cents/lb for raw sugar in 1989 and 1990. It resulted from the mundane combination of rising consumption and falling production, both probably triggered by the very low prices of the preceding three years.

Both types of turning point contribute to structural changes in the market - trade diversion more obviously and often dramatically; normal cyclical turning points mechanically through differential growth rates - if consumption grows faster in developing countries than in developed, and those developing countries take some of that increased consumption from trade, then the structure of trade will evolve accordingly.

At the risk of overdoing the use of the word, the 1980s was a pivotal decade. A number of factors that had been at work in the world sugar economy came together resulting in the change in cyclical market behavior which was evident during the period of low stocks and tight supply from 1988 to 1990. 1990/91 was a turning point - according to our analysis there was a surplus of two

*The views expressed in this paper are those of the author alone, and do not necessarily reflect those of either the ISO Secretariat or members.

million metric tons and prices turned down, although not dramatically. I am going to argue that 1991/92 may prove the more significant of the two, but first it is important to review the events of the 1980s in a little more detail, to see how we arrived at this point of departure (Chart 1).

The 1980s could be characterized as "the decade of the competitive sweetener" or rather more dramatically as "the decade that the old sugar cycle self-destructed." It has been fashionable in recent years also to call it the decade of protectionism. All three descriptions amount to the same thing.

In simplistic summary, world sugar prices rose in 1974 to such surrealistic levels that a competitive sweetener was rapidly developed, overinvestment occurred in sugar production, and the EEC expanded production to the extent of becoming the second largest sugar exporter. These trends, reinforced by the 1980/81 price boom, led to the imposition of import quotas in the US and a subsequent rapid decline in its imports, further expansion of production across the world in the early 1980s, and, by 1985 the largest surplus and probably the lowest real prices of all times. The period from 1975 to the present may represent the greatest shake-out the sugar market has ever seen. Not only did a competitor, HFCS, push sugar out of established end-uses - above all, soft drinks - but there was also a high level of rationalization and consolidation in the industry worldwide. This occurred both within countries and within individual firms.

How have these structural changes affected the price formation process? The fundamental shift has been the greatly increased market share of developing countries and the consequent sensitivity of the market to developments in their economies. Two thirds of the price setting market is now in their hands, an almost exact reversal of the situation in 1975. The reduction in the share of demand coming from high income/price inelastic importers, such as US and Japan, has greatly reduced the upward pressure on prices when there is a shortage, or the expectation of a shortage (Chart 2). Consequently the sugar price cycle has become less extreme, not only because of the reduced pressure on prices during the shortage, but also because the price signal given to producers, at the peak, is much more reasonable (Chart 3). Overinvestment and gross overproduction are much less likely, so that the price troughs are unlikely to be as low as before. Less disruption during the trough should lead in turn to an industry better able to meet an eventual upturn in demand. This is the situation we have seen developing in the late 1980s.

To have exchanged a more stable, self-regulating market for one which at one moment told producers that they should plough up their fields and dismantle their factories, and at another that they should plant every square inch of arable land in cane or beet, could be considered no bad thing. But the 1980s has also thrown up some problems. One is the lack of growth in trade, even in the second half of the decade when prices were mostly below or at their long-term average. Yet, in spite of consumption growth in importing countries of nearly 16 million metric tons, net imports actually declined between 1983 and 1990 (Chart 4).

The failure of exporters to capture one tonne of what was slightly above

average growth in world sugar consumption will be very worrying to them. The factors which lead importing countries to meet consumption growth by increasing their self-sufficiency are many and complex. But one reason might be a reluctance, even when prices are low, to commit an increased share of consumption to a market perceived to be highly unstable. This would especially exercise developing countries where hard currency was at a premium and where reducing sugar consumption could be politically sensitive. As the consciousness of a more stable market is raised over time, this attitude may change. The important point is that the world market, reflecting world consumption (the developing countries' share of world consumption passed the 50 percent mark in the early 1980s), is now firmly focussed on the developing countries. This is where the growth will come from in the next decade. Prices will be set by what they are willing and able to pay.

This brings us to 1990/91. We had the Gulf War and recessionary tendencies across the world. Developing countries, still suffering from debt, were affected by the economic downturn in the main market for their goods. Demand for sugar weakened and we had the turning point - a surplus after two years of deficit. This illustrates another change from the traditional cycle:- The sugar cycle now appears to be more affected by general world macro-economic conditions, not just the extremes. In this case the downturn from a cyclical peak was largely caused by weakening demand, rather than vast overproduction generated from within the sugar economy. This suggests, and I believe it to be true, that without the world recession and the Gulf War the world sugar economy would have continued longer at a level of activity close to balance, with raw prices in the 12-15 cent range seen during a large part of 1989-90. A recovery in developing countries could have kept it up indefinitely.

Now we finally reach this year, 1991/92, and return to the theme of major turning points involving the diversion of trade flows.

The developments in Eastern Europe, and particularly the USSR, have this potential and have thrown a hammer and sickle into the recently more stable works of the world sugar market. The situation is now very unpredictable. All we can do is discuss the possibilities, without necessarily attaching probabilities. Some things are obvious - the Soviet economy is in a state close to collapse and the rouble is nearly worthless. Oil production is falling, hard currency has many competing calls, and the devolution to the republics has introduced further problems of distribution and payment (between the republics). How will this affect sugar? The Cuba/USSR arrangement, already in a process of reform, has been further complicated by the new combinations of oil/sugar surplus/deficit (republics with oil do not necessarily need sugar, republics that need sugar do not necessarily have oil and republics with an internal surplus of sugar need oil).

Although there is an overall need for both the USSR and Cuba to continue the exchange, the complications involved and the lack of means may eventually lead to a further displacement of Cuban sugar onto the world market. Large compensating free market purchases by the USSR of the order of magnitude associated with past coincidental Cuban and Soviet production difficulties are unlikely. (In 1972-73 and 1979-80 these USSR purchases, from one to three million metric tons, were an important component in past booms). The problems

in the Soviet economy will prevent them playing such a role in the foreseeable future. Only purchases of a smaller magnitude, backed by G7 credits, seem likely. Consumption in the former USSR is expected to fall as a result, and any recovery is likely to be delayed, and slow. On the production and distribution side there is disorganization (or reorganization). Production this year looks like being 1.5 million metric tons down on the previous year. But two points should be borne in mind for the future:

- 1) The devolution to the republics may encourage more self-sufficiency in the sugar deficit republics (to save roubles, oil or hard currency) and more production in the surplus republics (to earn more of the same);
- 2) Yields of sugar are very low in the former USSR. The average in 1990 was 1.2 metric tons per acre, compared with over three metric tons in the EEC. It is possible that relatively cheap and simple improvements and reforms could bring significant increases.

In the long term, the USSR is technically capable of being self-sufficient in most temperate agricultural products, not just sugar. This begs a question which has implications in trade policy:- The USSR spends a lot of money on agricultural imports each year. In aiding the reconstruction of their economy, is it better to give them money to build completely new light/consumer durable industries and at the same time lend/give them money to buy food, or is it better to give them technical assistance and investment to help them to be self-sufficient in agriculture, especially if such assistance is productive at the margin because of good soils and the low base to which it is being applied, so that the money saved from food import bills could be used to buy the capital goods needed to restructure from heavy to light, consumer orientated industry? It is a question about the efficient use of the scarce aid dollar - where do you get the best results? I do not know the answer to this question, or even whether it is being debated, but clearly the answer could have serious trade policy implications for all countries trading in food products which the USSR has been importing in large quantities over the past decade.

Whatever the answer, the Soviet Union will be a less important player in the sugar market in the short-term, and even if Cuban output declines, it is likely that more Cuban sugar will enter the free market. The north/central Eastern European sugar producers - Poland, Hungary and Czechoslovakia - are all traditional sugar exporters with potential for expansion. Cuban sugar has already been displaced from their market. Bulgaria and Romania, although still importing Cuban sugar, have plans to expand production. Given the importance of Eastern Europe and the USSR in the world sugar market, these are not cheerful conclusions, and they explain why 1991/92 might yet enter those sugar history books.

Clearly, Eastern Europe and the USSR cannot be taken in isolation. As just implied, there is a strong interaction with Cuba. The size and destination of Cuban exports will play a key role in shaping the world market in the 1990s. Many possible scenarios are being discussed. About the only one that can be discounted is a return to the pre-1959 situation - in 30 years the basis for re-establishing Cuba/US economic relations has changed out of sight. I do not

want to discuss the alternatives, but only to point out one fairly obvious factor. The Cuban economy remains heavily dependent on sugar both in terms of GDP and (particularly) external trade. Whatever the political or economic circumstances, a shift away from sugar would be costly, either in economic terms if it was funded, or in social terms if the industry was seriously curtailed. This could create severe regional problems.

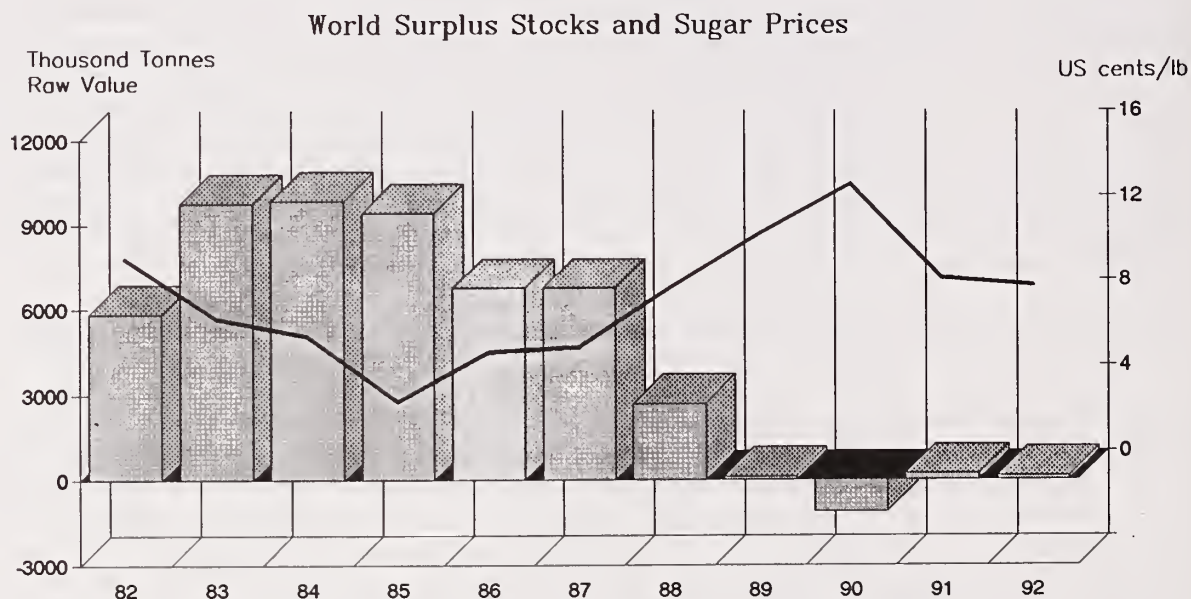
Part of my brief was to talk about prices. It is not by chance that I have not. Price prediction is a loser's game. Even if you are right it is probably coincidence. In the late 1980s, predictions of 20 to 35 cents/lb for raw sugar were commonplace. One study even talked about 60-80 cents/lb around 1990. At one point, in 1987, I was rash enough to join the throng, suggesting two turning points, one at 10 cents (a "boomlet") and one at 15 cents (a "boomette"). I do not want to spoil my record by making any more predictions. But I think that the following can be said:- since the arrival of competition, the long-term price should not rise significantly above the cost of production of the competitor, allowing for different levels of capital costs in different locations. The dominance of the market by developing countries, and the share within that of poorer developing countries, will also act to constrain prices. However, should developing economies, as a whole, begin to grow strongly (as they did in the 1970s), the increased demand could give a balance of supply and demand at higher prices than seen in 1988-90. But the upward drift of the peak price will still be limited, in the long term, by the cost of production of alternatives (principally HFCS). On the other hand, price troughs should not be as deep as previously because the producer response to the peak price should be more restrained. The conclusion would be that the period from 1988 to 1991 provides a good model for the 1990s, with the caveats

- (i) that a severe disruption due to USSR/Cuba problems could breach the range at the lower end; and
- (ii) that if developing economies begin to grow strongly in the second half of the decade (there seems little chance now that this will happen in the first half of the decade with Eastern Europe likely to soak up any spare credit or investment), the peak price levels may be raised a few cents.

We might conclude that sugar is in for a difficult decade. On top of all the other factors, the Uruguay Round of GATT negotiations is finally approaching a conclusion, somewhat leaner in agriculture, it appears, than when it started five years ago. With the uncertainty that is already around, the introduction of new trade rules and controls on protection may add to it. Given the inherent problems of sugar production - long production cycles, vulnerability to weather, the industrial component and asset fixity - which have in the past contributed to its instability (in my view it is the search for more stability which has led to increasing protection, rather than protection which has led to instability, although protection, once in place, increases the instability), the situation over the next few years will need careful management. Information, statistics and an understanding of how the market really works will need to be freely available so as to inform rational decision making. Governments and industries will need to talk to each other and keep each other informed. This is why a number of our Members believe the

ISO has an important function to perform, and that it should be preserved in its present form and status. GATT, as its name implies, is a general agreement. It does not necessarily deal with the specifics of individual products. Political acceptance is an important part of successful implementation. One suggestion is that the ISO could provide a useful complement to GATT decisions, if the contracting parties so agreed. In general, with all the uncertainties facing the sugar market in the 1990s, the greater the opportunity to discuss, debate and study the problems, the better will be the decisions that are taken.

Chart 1



Data source: F.O. Licht and ISO
 Note: September/August year,
 stocks are beginning stocks.

ISO Chart

Chart 2
Changes in the Structure of Sugar Imports - early 1970s v late 1980s

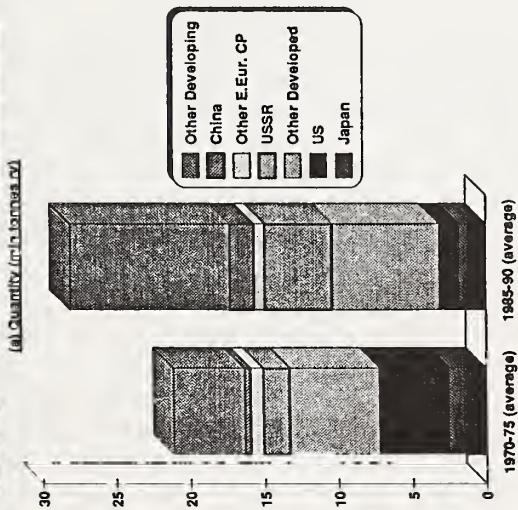


Chart 3
World Raw Sugar Prices, 1970-1991

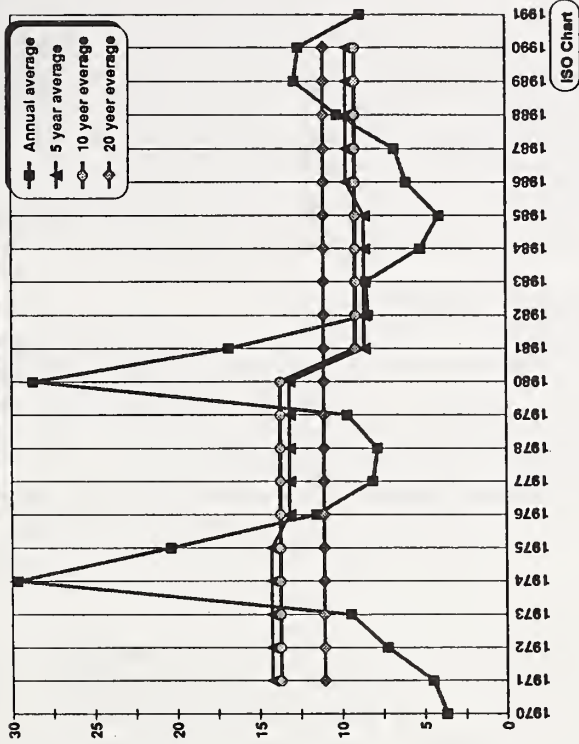


Chart 4

World Consumption and Net Imports, 1938/39 - 1990
(mln tonnes M)

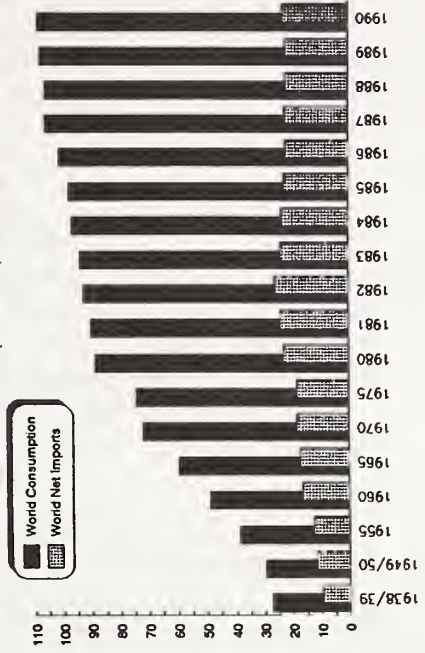
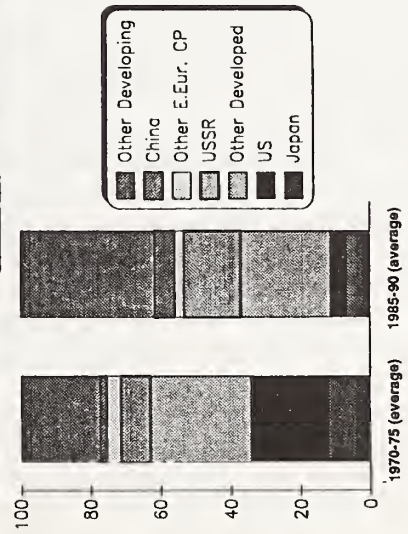


Chart 4
World Consumption and Net Imports, 1938/39 - 1990

(b) Shares (%)



ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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Outlook '92

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INTRODUCTORY REMARKS

for

Agriculture Outlook 1992: Panel Discussion on U.S. Sugar Program

Robert D. Barry

Assistant to the Deputy Administrator,
Program Planning and Development (DAPPD)

Agricultural Stabilization and Conservation Service (ASCS)

Two Outlooks ago, in trying to express the audience's major question, I did a solo number of "Roll out the quota" to the tune of "Roll Out the Barrel". Given the less-than-enthusiastic response, I will mercifully not sing again. But if I were to sing, the refrain would now be "Roll out the regulations; Roll out the regulations of fun..."

I guess we are starting to have fun. The final loan program regs were issued on September 18; interim reporting and recordkeeping rules, September 19; final marketing assessment rules, October 29; and the proposed rules on marketing allotments finally cleared the Office of Management and Budget and were published two days ago.

There's more to come: we've pushed back the reporting requirement due dates and are in process of developing the final rules for issue in early January. Comments on the proposed marketing allotment regs are due January 2 and we would hope to get final rules in February. Meanwhile, last week, the Food, Agriculture, Conservation, and Trade Act Amendments bill of 1991 (the technical corrections bill) was passed, with implications for changes in marketing assessments, reporting requirements, and marketing allotment regulations. The technical corrections legislation, and your comments, will be important to us in formulating the final regs. The real fun, of course, is in the test of the regulations. I mean primarily the marketing allotment rules based on the 1990 Farm Act sugar provisions which attempt to re-create the comprehensive regulations of the old Sugar Act which lasted 40 years and went out with a bang 17 years

ago this month, in 1974.

In quick perspective: there was minimal sugar support for the 1977-79 crops. The 1981 and 1985 Farm Acts provided a loan program for sugar, supported first by duties and fees and then, in 1982, import quotas. Attempted circumvention of quotas, and a few scandalous (so-called "bittersweet"), operations led to comprehensive regulation of imports. Now, with the 1990 Act, extensive regulations have enveloped domestic marketing as well.

In the course of this year, I've been struck by a sense of nostalgia in the industry, for what is felt to be the well-being of the industry under the old Sugar Act, as if it were some sort of Golden Age. Indeed, the 1990 Farm Act's sugar provisions were apparently inspired by the Sugar Act. But these are the 1990's, and trying to graft the Sugar Act provisions onto new program directives and realities may dispel a few illusions.

Unlike the old Sugar Act days we now have:

- a loan program, with a "No-cost Mandate" which is especially challenging because of the new cane/beet differential loans;
- a minimum import level;
- potentially new rules on trade through the GATT and NAFTA (North American Free Trade Agreement);
- technologies, particularly the de-sugaring technology, which will complicate marketing controls;
- some very interesting corporate structures that cross-cut cane and beet sectors and even the high-fructose frontier.

The sugar provisions of the 1990 Farm Act were negotiated among the sugar industry, I understand, through long hours of arduous bargaining which probably can be boiled down to an agreement on market-sharing. Still, the statutory language papered-over divergent and conflicting interests which predictably would surface, once the legislation had to be implemented in concrete terms. The division of interests became perfectly transparent at the April 19 consultations, especially on the question of proper weights to be attached to the three-factor allocative criteria of past marketings, processing and refining capacity, and ability to market. In writing the regs, we tried to be as "fair, efficient, and equitable" as possible. But inevitably, some group's notion of fair and equitable will be another's perceived inequity.

To its credit, the industry in the past five to ten years has

taken significant steps to raise productivity and explore new technologies in production and uses of sugarcane and sugar beets. The industry is now stronger and more efficient than ever before, and should there be free trade under fair multilateral rules, may well surprise many of its critics. However, there is a tension between the promises of productivity and growth, and the marketing controls which are the heart of the new sugar program. If a firm has a comparative technical or economic advantage, would it not want to press its potential? Yes. Would it do so only by lowering cost, improving profit margins, and not expanding production? I doubt it. If profits can be made by expanding output, surely the company will want to pursue that avenue. Given the vitality of a good part of the industry, however, the result of growth could turn current sugar legislation into a Frankenstein monster, creating the potential for surpluses which cannot easily be disposed of in a regime of strict marketing controls.

Perhaps political realities on Capitol Hill, with a little nudge from Caribbean sympathizers, forced the industry into this intricate system of comprehensive controls. Perhaps a bit of nostalgia. But if marketing allotments kick in, can regrets be far behind?

I've been asked to give highlights of the marketing allotment regs, for those who may not have yet seen the proposed rules:

Legislation requires that before October 1 of each of the 1992-1996 fiscal years, an estimate of U.S. sugar import requirements must be calculated. If the estimate is less than 1.25 million short tons, raw value, marketing allotments must be imposed to limit the quantity of U.S. sugar production that can be marketed for human consumption in the United States. The overall marketing allotment is calculated by deducting the amount of carry-in stocks and imports of 1.25 million tons, from the sum of estimated consumption and reasonable carryover stocks. The overall allotment is then divided between beet and cane sugar. Within the allotment for beet sugar, allocations will be made among beet sugar processors. For cane sugar, the allotment is first allocated to each sugarcane-producing State, and then allocations are made among processors in each State. The overall allotment and subsequent processor allocations are to be assigned in a fair, efficient, and equitable manner on the basis of three criteria:

1. past marketings of sugar processed from any or all of the 1985-1989 crops;
2. processing and refining capacity; and
3. ability of processors to market such sugar as may be allocated.

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NUTRITION LABELING: WE'RE ON OUR WAY

The Honorable Jo Ann Smith
Assistant Secretary of Agriculture
Marketing and Inspection Services

Thank you, Mr. Secretary, for joining us today to reiterate your interest in and support for nutrition labeling reform.

Before we get into the panel discussion, we have one housekeeping reminder. Be sure to fill out the evaluation form included in your registration package and hand it to one of the conference staff members in the foyer outside this Auditorium.

Now, on with our discussion. First, let me say -- I am delighted to moderate today's panel discussion on one of the most important and visible issues facing consumers today -- nutrition labeling reform. Like Secretary Madigan, all of us at USDA are committed to developing "consumer friendly" nutrition labels that will help consumers make sound, healthy choices about food when shopping.

And, I am happy to say that we are on our way to making that happen. Let me explain.

You are undoubtedly aware that the 1990 Nutrition Labeling and Education Act affects all foods regulated by the Food and Drug Administration. What you may not know is that the law does not apply to meat and poultry products under USDA jurisdiction.

You may also be unaware that Congressman Edward Madigan was a key architect of this law. Quite naturally when he was selected to head the Department of Agriculture, Mr. Madigan brought along his commitment to sensible nutrition information.

Secretary Madigan's commitment to improved food labels took the form of active support for the Department's decision to voluntarily develop a proposal of nutrition labeling rules for USDA-inspected meat and poultry products. The result is that USDA's proposed labeling rules are in lock-step with those detailed for FDA in the law.

On November 6, we at the Department of Agriculture were exceedingly happy to join our colleagues at the Department of Health and Human Services in announcing new nutrition labeling proposals at a press conference here in Washington.

That announcement came after many long hours of hard work on the part of USDA and DHHS employees. We also were pleased to have strong public involvement from consumers, nutritionists and other health professionals, and industry experts all along the way.

The announcement set into motion a series of changes that will make food labels sound and, indeed, "consumer friendly". The new food labels will have words that folks across this great Nation can read and truly understand.

Under the new rules, consumers everywhere can be sure that the words on the label accurately reflect what is in the package. If the package label says the product is "low fat", it will truly be low in fat. Under the new rules, each descriptor such as "low fat" will be so clearly defined that consumers will know it can mean only one thing.

We expect the proposed new rules to clear up confusion on terminology. With easy to understand terms on labels, consumers will be better able to make nutritionally sound food choices when shopping for their families.

We are quite pleased with the initial responsiveness from industry about labeling reform. We can now expect food stores not only to provide choices in food products but also information so important for making healthy dietary choices.

For months on end, many people in USDA and DHHS have worked very hard to bring about the proposed labeling reforms. We are truly pleased that our panel today includes two of the pioneers of label reform for USDA and DHHS. They are Margaret Glavin, Deputy Administrator for Regulatory Programs in USDA's Food Safety and Inspection Service; and Edward Scarbrough, Director, DHHS's Nutrition and Food Sciences Center for Food Safety and Applied Nutrition in FDA.

We are equally delighted to have representatives from the public sector to share their views during this morning's discussion. They are Carol Scroggins, President of Consumer Voice, Inc.; and J. Edward Thompson, Chief Food and Drug Counsel for Kraft General Foods, Inc.

Each of our distinguished panelists has been given 10 minutes to speak about the proposed label reforms. After everyone has spoken, we will open the floor for questions from you all.

There is much to cover this morning, so let's get underway. Thank you.

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For Release: Thursday, December 5, 1991

OPPORTUNITIES TO TEACH BETTER NUTRITION

Edward Madigan
Secretary of Agriculture

When President Bush appointed me Secretary of Agriculture, I made it a personal priority to apply the principles of nutrition education in the programs of USDA. My earlier interest in nutrition education led me, as a congressman, to co-sponsor the Nutrition Labeling and Education Act which applied to FDA-regulated foods.

Teaching consumers about nutrition is important for our nation to enjoy healthy, well-balanced diets. All Americans want to know more about good nutrition. They want to know how to select a sensible diet, and they want to know what nutrients are in the food we eat.

On November 27, USDA and DHHS published a proposed regulation to improve labeling for all foods. The government is now speaking with one voice on the important issue to provide consumers with the information to make wise food choices (you'll hear more from FDA today).

USDA proposed a voluntary nutrition labeling program for raw, single ingredient meat and poultry products, and a mandatory labeling program for other meat and poultry products from canned beef stew to frozen chicken dinners.

For the first time, nutrient information will be linked to standard serving sizes. Terms such as "low-fat" will have the same meaning for all foods.

USDA will also play a key role in a broad consortium on nutrition labeling and education. We'll be working with DHHS and a variety of professional, trade, and consumer interest organizations to reach many different audiences.

The food assistance programs that USDA administers also provide important opportunities to teach participants about nutrition. We can help participants make effective food choices that have lasting effects.

The WIC program that provides supplemental foods to pregnant women, infants and children has always had a nutrition education component. Studies tell us that the program is highly effective. We want all our programs to be as effective as WIC.

It is important to teach low-income Americans about making wise food purchase and preparation choices since they have limited incomes. Our research shows that families on food stamps already shop more wisely than poor families that do not participate in the program. We must continue to help poor Americans understand how to use their food resources efficiently.

It is especially important that we teach children these important principles since eating habits are formed early in life. We also want to educate children and school food service staff about the importance of following the Dietary Guidelines. That's because the National School Lunch Program serves over 24 million meals a day to our nation's school children.

Earlier this year I made a commitment. I said that by 1994 schools would have the tools to comply with the Dietary Guidelines so that they can meet the goal of 30 percent of calories from fat (from the Dietary Guidelines) in the menu cycle for the lunch program by the year 2000.

There is another reason for my interest in health and nutrition programs. It involves the federal budget. Studies show that people who benefit from USDA's food assistance programs are among those whose health is most at risk. Dietary habits need improvement.

This is crucial. USDA is spending more than \$30 billion this year on such programs. They touch some 55 million Americans of all ages.

Good dietary habits can help hold down the rising costs of such programs as Medicare and Medicaid. We need to do everything we can to make sure people understand the relationship between diet and health. It is, in effect, part of our health policy.

So, I'm grateful that we have a panel here today to examine "Opportunities for Better Nutrition," moderated by Jo Ann Smith. You'll hear talks on nutrition labeling for meats, poultry and other foods. And then panelists will look at consumer attitudes.

After a break, a second panel hosted by Catherine Bertini will look at nutrition content... and food assistance for a healthier tomorrow.

I invite you to listen in...become part of the discussion...as we examine the "Opportunities for Better Nutrition."

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1991 Outlook Session

December 5, 1991

NUTRITION LABELING: PHASE TWO

Margaret O'K. Glavin

Deputy Administrator, Regulatory Programs
Food Safety and Inspection Service

It is a pleasure to be with you today. Only a few short weeks ago many of us at USDA enjoyed with our DHHS colleagues the somewhat heady feeling that comes with reaching an important milestone. That milestone was, of course, joint issuance of nutrition labeling proposals for virtually all foods.

Secretary Edward Madigan and Assistant Secretary JoAnn Smith have already provided you with some background on USDA's November 6 announcement that USDA would propose nutrition labeling requirements for meat and poultry products to parallel nutrition labeling requirements for other foods.

The proposal itself was not actually published in the Federal Register until November 27. That means the public comment period started ticking away last week; public comments will be accepted until February 25, 1992.

The USDA proposal is quite similar to that of the Department of Health and Human Services. Most of the Food and Drug Administration proposals and final rules on nutrition labeling are tied to the Nutrition Labeling and Education Act (NLEA). The NLEA has no provisions for meat and poultry products. Nevertheless, USDA Secretary Madigan, a congressional architect of the NLEA, was determined to provide sensible nutrition information and education to all Americans and directed that the proposal under development be finalized.

At USDA, we are well aware that Secretary Madigan's interest in and commitment to nutrition labeling were critical in bringing us this far. Now that we have tasted the success of actually issuing proposals, we must tackle phase two --development of final regulations. We are confident that the Secretary's guidance and support will help us reach that new goal.

For both agencies, our goal for phase two is publication of a final rule by November, 1992. Phase 3, implementation of the new requirements, is now targeted for May 1993.

During the public comment period, our hope is that those who are interested in the proposals will make substantive comments to both agencies.

Although our consideration of the issues has been exhaustive -- on both the part of USDA and DHHS -- we don't claim to have all the answers. We may not even have all the questions. To date, USDA and DHHS have stayed on parallel regulatory tracks. However, those of you who are seasoned observers of the regulatory process know that the public comment period can identify new concerns, change the way issues are perceived, or identify new approaches. That is its value.

Now I'll briefly describe the proposal of USDA's Food Safety and Inspection Service.

Voluntary nutrition labeling. We have proposed a voluntary nutrition labeling program for raw, single-ingredient meat and poultry products such as chicken breasts and beef roasts. All other meat and poultry products would fall under the mandatory program. The line between "raw, single-ingredient" and "other" is strictly delineated in the proposal. Even basted chicken breasts would fall under the mandatory program, and I would expect this to be one issue on which there is much comment.

The proposed voluntary program would have some flexibility. Manufacturers could choose to list nutrients "as packaged" or "as consumed."

An "as packaged" label would list the nutrients in a serving of raw chicken breast with skin -- if the product was packaged with skin. An "as consumed" label would list the nutrients in a 3-ounce serving of that same chicken breast -- cooked without added flour, fat, salt, or other ingredients that could alter nutrient profile -- and cooked using a common method such as oven baking.

For the voluntary program, manufacturers could choose to list nutrition information on the product label, in a labeling insert, or at the point of purchase -- on a shelf sign, poster or other in-store display.

The FSIS proposal for voluntary nutrition labeling of raw, single-ingredient meat and poultry products is quite similar to the Food and Drug Administration's (FDA's) final rule for voluntary nutrition labeling of raw produce and raw seafood. However, there are some minor differences. For example, under FDA's voluntary program, nutrients on a package of raw seafood will be listed on an "as consumed" basis.

Both agencies have indicated their intent to mandate nutrition labeling for raw foods if the marketplace is not responsive. However, FDA is required to take this step under the NLEA; our plan is to propose consistent requirements.

Nevertheless, I think it's safe to say that both agencies are optimistic that most in the food industry recognize the importance of nutrition labeling to consumers and no mandatory action will become necessary after 1995, when FDA and FSIS will issue a report on marketplace participation.

Mandatory nutrition labeling. At FSIS, we estimate that 9,000 firms and 500,000 meat and poultry products -- from hot dogs to beef burritos and chicken pot pies -- will be affected by our proposed mandatory requirements.

All processed products will be required to carry nutrient information on the product label, except for very small packages (1/2-ounce or less) and very large, institutional-size packages. This would include large packages of deli meats that might be sliced in a retail store. For those products, alternate means such as a poster or accompanying pamphlet might also be used. If you think of the difficulty of adding nutrient information to the label of a stick of beef jerkey, you'll understand our logic for proposing alternates for very small packages. And, for the very large packages, we have no way of knowing at the point of packaging -- the inspected plant -- how the deli manager will choose to slice the ham.

Nutrients. The proposed list of nutrients for the label -- for both the voluntary and mandatory programs -- includes those 15 nutrients generally recognized as of dietary importance -- calories, calories from total fat, total fat in grams, saturated fat in grams, cholesterol in milligrams; total carbohydrates in grams (excluding dietary fiber, complex carbohydrate in grams, sugar in grams, total dietary fiber in grams; protein in grams; sodium in milligrams; and Vitamin A, Vitamin C, calcium, and iron -- each as a percent of Daily Value.

If more than 8 of the 15 nutrients that must be listed are present only in insignificant amounts, FSIS proposes use of an abbreviated format listing at least total calories, total fat, total carbohydrates, protein, and sodium. An insignificant amount is one that can be rounded to zero; for example, 0.2 grams of total dietary fiber.

Under the proposal, manufacturers could -- after listing the required 15 nutrients -- list several other nutrients, or list the required nutrients in additional useful ways. For example, after listing calories from total fat, a manufacturer might choose to list calories from saturated and unsaturated fat, from total carbohydrates, and from protein. However, once a manufacturer chooses to make a labeling claim about a nutrient, under the proposal the nutrient content would have to be listed as well.

Nutrient declarations would be based on the weight of the serving (in grams) or, in the case of meal-type products and food products in pieces or units, on the weight of the meal or piece. This leads us to the issue of serving size.

Serving Size. The serving size issue is another one that would have challenged Solomon. We don't think he would necessarily be satisfied with our proposal, but it is both internally consistent and compatible with FDA's.

The bottom line is, serving sizes would be listed in common household measurements such as cups, tablespoons, teaspoons, or ounces. The serving size for meal-type products would refer to the product in its entirety.

We have grouped meat products into 23 proposed broad product categories, and poultry products into 22 proposed broad product categories. For example, luncheon meats includes hot dogs and many other similar products; another category is entrees with sauce. The "reference value" for a serving of hot dogs -- the amount that would be eaten by a person 4 years of age or older -- is 55 grams (about 2 ounces). Under the proposal, a hot dog that weighed 55 grams or one that weighed 65 grams would each be considered one serving, since both are close to the reference value. Nutrients would be declared on the basis of the weight of the hot dog.

For the voluntary program, we have identified what we believe are the 45 most common retail cuts of raw meat and poultry, and have identified a serving size of 3 ounces on the cooked basis. We expect comment on both our delineation of common cuts and the serving size.

Descriptors. FDA has defined nine descriptors for foods under their jurisdiction. Our proposal incorporates those same descriptors, with two additional descriptors unique to meat and poultry products -- lean and extra lean. We do intend those descriptors to be linked both with 100 grams of the product and with a serving of the product, although in an oversight our proposal did not make that clear.

These terms would allow consumers to choose among meat and poultry products on the basis of fat content, even if the products do not meet the low-fat descriptor requirements. We believe these provisions would allow customers to make meaningful choices to reduce overall fat intake, while encouraging the industry to be responsive to that consumer and health concern.

Health claims. FDA's regulatory documents deal with the issue of health claims; ours do not. We will follow FDA's lead on this issue.

Compliance. The issue of compliance is one on which we expect much comment. Our interest is in implementing a workable nutrition labeling program that will provide consumers with useful information without becoming an unwieldy and ultimately unenforceable burden on the food industry.

We expect that many will wish for more precision and more exactness in the number of categories and the parameters of accuracy. However, we believe our proposal takes into account both the limits of science and the core goal of providing information consumers can use to improve their diet.

We recognize that some product manufacturers will choose to conduct nutrient analyses. However, we are hopeful that the food industry will make a concerted effort to gather additional reference data together.

For enforcement, we are proposing a system that will enable us to have access to records and to take verification samples for nutrient analysis, but which will recognize the good-faith efforts of the food industry to institute nutrition labeling in an orderly way. Our proposed approach is not punitive. Rather, we will give manufacturers an opportunity to correct inaccuracies, recognizing the enormity of this new initiative.

Format. The actual format of the nutrition label is still open to much study and public comment, although FDA has indicated its intent to propose a format by spring. We will study this issue with FDA and will propose the same format. One of the difficulties is that label formats that are appealing to consumers may not be the most useful. This remains one of the thorniest issues we face in implementing nutrition labeling.

Economic Impact. As part of its nutrition labeling proposal, FSIS published a preliminary analysis (PRIA) of the costs and benefits of the proposal. Because of the preliminary nature of this analysis and the magnitude of the costs and benefits involved, FSIS requested all interested parties, including meat and poultry processors, food retailers, trade associations, health professionals, consumers, etc., to submit any additional information regarding the validity of the cost or benefit estimates included in the PRIA.

FSIS plans to publish a supplement to the PRIA for public comment within 60 days of the November proposal. The Agency is particularly interested in receiving early comments on the original preliminary impact analysis and on the alternatives considered to facilitate formulation of the supplement to the PRIA. In order for this major initiative to be implemented smoothly, we must squarely confront the economic issues.

Education. Hand in hand with the regulatory objective must go the issue of consumer education. In order for nutrition labeling to make a positive difference over time, consumers must understand the meaning of the nutrient information and how to apply it to their food buying and preparation choices.

As you have heard, Secretary Madigan believes in a concerted, cohesive approach to the issues of nutrition labeling and education and has a special concern that nutrition information and education be available to the most disadvantaged members of our society.

USDA and FDA are now forming a broad educational consortium -- a coalition of coalitions -- that will work together over the next several years to maximize the value of nutrition labeling through effective information and education. Some groups of nutrition professionals and trade associations have already identified audiences and approaches to reach particular audiences. Our goal for the umbrella coalition will be to ensure all audiences are being reached with the appropriate messages, and to minimize duplication.

Initially, we expect most educational efforts will be focused on "label education" -- helping the public understand the meaning of the information on the label.

Over time, as people become familiar with the new label, we expect the educational focus to shift to nutrition education -- how people can use the label information to make sensible nutrition choices for diet and health.

It is our hope that practical nutrition labeling will be an important aid in reaching that goal.



Outlook '92

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CONSUMER ATTITUDES TOWARD LABELING

Carol D. Scroggins

President, The Consumer Voice, Inc.

The consumer of the 90's is different from those of the 80's. As the baby boomers become eligible for Ken Dykwald's WOOF pack, (that is Well Off-Older Folks) the 90's model are more independent thinkers. They are non-conformist, want quality, service and luxury but shop the off-priced stores as well. They are more demanding, knowledgeable, sophisticated, yet price, nutrition and health sensitive. They know what they want and what they are willing to pay for it.

Unfortunately, this dichotomy of consumer attitudes also contains a growing cynicism. There seems to be a widespread feeling that products and services are less than they want and less than they believe they got in the past. In short, today's shoppers generally believe they don't get the level of service or quality they want, certainly not at prices they are willing to pay.

One of the major questions that has puzzled marketers for many years is, what is the best predictor of future behavior, attitudes or past actions? Ropers' PUBLIC PULSE recently said there is often a gap between attitudes and behavior. The challenge is understanding consumer motivation, defined as a "predisposition" to behave in a specific way to specific stimuli.

An attitude, then, is a part of the basis for development of actions. Behavior follows opinion, opinion flows from attitude and attitude comes from one's total experiences. However, not always in that order. Events modify behavior apart from attitudes; and behaviors may, or may not, result in changed attitudes. Consumer attitudes, behaviors and opinions seem to flow from an accumulation of life's experiences - all at the same time - and new actions have a way of emerging just when you think you have it all figured out. Consumers act logically, illogical in times of stress. However, there is no behavior change without a change in attitude. Consumers have been in the "attitude-change" mode for several years and behavior changes are now taking place, especially in diet/health issues.

To attempt to answer the attitude/behavior question and to prepare for this presentation, CVI asked consumers, via a mail survey and two focus groups, for their opinions and concerns about food labeling. While the data is not projectable, these 90's consumers reflect other research. Most consumers are quite knowledgeable about what is on labels now and have strong opinions about what they have heard about the changes that are on the way. They are very concerned about completeness of the food labels and nutrition/health information. They expressed concern with the fat/cholesterol confusion, sodium/salt, calories, fiber, vitamins/minerals and family and heart health. My comments are based on this consumer input, the letters we receive every day, and other research.

Food shoppers are concerned, and confused, about who and what to believe!! Many feel as these focus group consumers:

"...the choices are all bad...you have no choice..."

"...companies must think consumers are dumb..."

"...when it comes to the label, who do you believe, watching TV every day, it's hard to tell..."

As food labels change, we must make it easy to "see" and understand the new information. Consider the reading ability of many food shoppers. This won't be easy because of the limited space on package and because technical data is difficult to convey. One thing came in very clearly, the label information must be a marriage of technical information and "people language" that everyone can understand, as this exchange between two panelists indicates:

"...just make the label changes understandable. I read a can of pop, (a) plain label that said, this product has been known to cause cancer in laboratory rats, now that's plain...(another consumer replied), but it doesn't tell you that you have to eat a ton before it would hurt you..."

The voice of the consumers must be included in the partnership with producers, processors/manufacturers, retailers and regulators to assure their concerns are addressed from basic product development, to what the label "says", as well as "how it looks". Their needs must also be considered in developing the information pieces and advertising that will follow.

The 90's shopper is willing to make some sacrifices and feel they share a part in food safety, but only up to a point, and as their "current" priorities allow. However, at the same time, this new consumer is demanding industry and government assume a new role in assuring products are, what they say they are. Their expectations are high that the new labeling will do just that. Of course, they want it now and have problems with why it

takes so long.

Shoppers expressed feelings of helplessness in the face of all the social problems. They feel a frustration with all they must juggle every day. They are stressed out, confused about their role, worried about their health and that of their families and of the planet. They've become very cynical about products they buy and the companies they buy from. One shopper summed up the frustration this way:

"...if you watch everything you eat, what are you going to be able to eat, the chickens, fish and oceans are polluted, the veggies and fruits have pesticides, so what is there?...just take the alar scare on apples two years ago, do you realize how expensive apples have been ever since?..."

Having concerns does not mean they won't buy. It does mean the 90's consumer will look for products and services that make them feel safe and let them escape from some of the pressures of daily life.

They expect companies and government to subscribe to the "decency decade". A revival of integrity is longed for by many shoppers. Business/government will have to "sell" who they are as well as what they make and actions they take. The food industry will need to prove that they are "human", that their products are not harmful to people or the environment, that they are doing their part and they are being truthful without misleading. Success will require listening to customers as individuals, not as a faceless mass as these shoppers indicated:

"...complete label information (is) vitally important, thank you for letting me tell someone about my concerns..."

"...thank you for showing concern by asking about family health matters..."

"...want to see health information on package only if it is truthful, no exaggeration..."

"...anytime you can serve your customers better in labeling both you and they will benefit..."

Brand loyalty has eroded. Within certain parameters, today's shopper will switch brands depending on the product or the item that is on sale. There is no question that consumers are vitally interested in what the label says but it is not the only factor in item selection. However, many are plainly discouraged with current labels as shown from these comments.

"...I really get disgusted with products that claim low fat or low salt and then completely wipe you out in some other area. And, also "lite" that isn't..."

"...I hope that misleading information is curbed..."

"...I resent 95% fat free and mean by weight when fat calorie content shows to be very high as in wieners..."

Almost all respondents said they read food labels almost every time they shop. Special diet or health needs in the household make the job harder. They said label information is hard to understand, but they were interested in what they've heard about the new label information.

"...new regulations seem to offer more information, every ingredient should be listed..."

"...would like to know what kind of oil and if hydrogenated oils are harmful..."

They said that they understand ingredients, most of the time, unless they were in "scientific" terms or when there is a TV report about hidden ingredients and questionable safety issues. They are less sure about other label issues like natural, organic, etc.

"...concerned about natural, what is unnatural?..."

"...I like organic...don't like the price..."

"...want a complete list of spices because of severe allergies..."

John Naisbitt, Faith Popcorn and others have tracked a change in kosher foods. The number of products jumped from 1,000 to over 18,000 items in the past decade. The real story behind these numbers is that two-thirds of kosher products (despite their generally higher prices) are purchased because they are perceived as fresher and healthier. Currently, kosher products account for about one-third of all packaged goods sold in supermarkets today. Some forecasters feel that the kosher certification symbol has become somewhat like a seal of approval. This change in product mix indicates consumer concern about "what is in it".

98% reported that they at least looked at the nutrition panel. One shopper said she read every label every time she shopped because she was afraid something might have changed. While this is an isolated practice, if she does it all the time, it does show how concerned some shoppers have become. Products that do not have the nutrition panel are suspect. This is likely to remain true under the new regulations in the few cases where labeling is not required.

"...if they can't, or won't, tell me what is in it, I don't want it..."

"...if there is no nutrition label, it's not good for you..."

Nearly three-quarters of those we talked to indicated they have changed what and where they buy as a result of food concerns, which includes price, as well as, quality and health.

"...label information helps make product choices..."

"...we eat differently now, we eat a lot more hamburger, chicken and fish...because of health reasons..."

"...they tell you what calories are there and how much is a percentage of fat but you have to figure out what it is. So, maybe 50% fat and still say lowfat..."

"...they just said tonight on TV that a little red meat is good for you, that you need some, but not a whole lot..."

Only a very few are willing to say that they had not made changes because of their concerns. Perhaps, because of their frustration in knowing who/what to believe, and, perhaps because consumers often speak "consumer-ese". That means they often think and speak differently than day-to-day actions would indicate.

"...I'm concerned, just haven't done anything about it..."

"...I'm concerned about nutrition content even though I have no health problems now..."

"...I read a lot of labels, my husband has cholesterol off the charts and his family has a history of heart trouble, so we eat a lot of fish and skinless chicken. We do eat a little red meat, because I have low iron, but we have to be careful with diet..."

Today's consumers express their growing concerns about price and what they consider "misleading" down-sized packaging.

"...prices change too often and may be manipulated..."

"...don't buy those cereals that cost \$4.00 per box that my kids see on TV, it's ridiculous. We eat oatmeal..."

"...downsizing is terrible - same price, less product..."

"...sometimes you have to watch your weights and measures, some items, say a pound but the one on sale may be 13 oz..."

The 90's consumer is willing to give the food industry another chance. Most are willing to be informed. They do respond to some price advertising, and indicate that they want and will read information at point-of-purchase, on product labels, in advertising and informational pieces.

In order to address the concerns of the buying public, however, a new sensitivity must be developed to provide full information, in "plain English" (as one male shopper put it) without overloading the available space on the label or the air waves. The credibility issue must be addressed if consumers are to be convinced of sincerity and honesty. Moral behavior cannot be legislated or advertised into existence.

Consumers want to be a partner in resolving some of the issues facing today's marketplace. They have their own ideas about what should be stated on the food label and how it should look, some of which is not do-able. Most are reasonable when presented with why it cannot or should not be done their way. They expect prices to be "reasonable" and understand that product cost includes many things other than the raw cost of product. They just do not understand the need for a continually increasing price when their income seems to be continually declining.

They are increasingly more time-poor. They are more sophisticated and knowledgeable. Changing demographics, lifestyles and psychographics will likely give us a future of even more knowledgeable, and often more intense, customers. Today's shoppers have developed a cynical attitude that has lowered their expectations about the quality of service or products that they purchase and the honesty of business and government.

Customer expectations are so low, that the good news is that exceeding those expectations becomes relatively easy. Sincere efforts to provide products that have the kind of information consumers want and which are focused on the consumer-user can make a big difference in their acceptance and loyalty, especially, when they feel their opinion counts.

The "educational" portions of the new labeling must be in place over time before it can be evaluated to be sure the right combination of appearance, design and package information will answer the doubts and questions the 90's consumer have.

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Outlook '92

Thursday, December 5, 1991

**MODERNIZATION OF THE FOOD LABEL:
AN INITIAL INDUSTRY IMPRESSION**

J. Edward Thompson
Chief Food and Drug Counsel, Kraft General Foods, Inc.

Let me begin by commending the Department of Agriculture and its sister agency on the enormous amount and impressive quality of the work that is reflected in these proposals. In attempting to describe industry's reaction to the current labeling initiatives I will speak from the perspective of a representative of a large national food processor which has been very active in the development and marketing of nutritionally modified food products, and which has a strong interest in being able to accurately communicate to the consumer the attributes of those products. Not all companies will share our interest or motivation. However, to the extent possible, I will try to express attitudes which may be appropriately generalized to the majority of the industry, but please bear in mind my loyalties.

Industry can appropriately view the ongoing initiative either as a considerable burden or as a unique opportunity. In fact it is both. The burden is obvious. Practically every label produced by the industry will have to be revised within a relatively short time period. New nutrition data bases and programs must be developed, in many cases by companies with no experience in this area. The cost will ultimately be measured in billions of dollars. However, I believe the opportunity is equally obvious. The recent legislation and the current proposals reflect a genuine concern on the part of the Congress and the regulators that the public has lost faith in the credibility of the information being communicated on food labels. The current initiative is an opportunity to restore consumer confidence in food labels as a source of accurate information.

For companies that have invested millions of dollars and thousands of hours in the development of nutritionally improved food products it presents an opportunity to communicate whatever advantages those products present without having to compete with identical claims on inferior products. If we regain our ability

to communicate with the consumer with a minimum of skepticism or disbelief, the cost may well be justified.

While many will characterize the initiatives as labeling reform, I believe it is more accurate to refer to the process as a modernization of the food label. The current labeling regulations were not designed to address the information needs of today's health conscious consumer. They were based on earlier concepts of product quality and composition which were appropriate then, but are now inconsistent with the product development and communication necessary to promote the dietary goals advocated by our nation's health experts.

The success or failure of the initiative will be judged by two criteria: Did it result in better consumer communication, and did it help promote the dietary goals? The remainder of my comments will address specifics of the proposals as they relate to these two criteria.

Harmonization between USDA and FDA of label format and content will accelerate consumers' ability to understand and utilize the new label. However, harmonization cannot be viewed as a snapshot. The Department recognizes that its present system of prior label approval may be inconsistent in some respects with the continuing maintenance of harmonization.

The majority of industry will agree that this is an appropriate time to reassess the need for and the mechanics involved in prior label approval. All concerned recognize that during the massive relabeling effort it will be physically impossible for the Department to continue to operate under the current procedure. It is clearly time to reevaluate and modernize the present system with an overall goal of minimizing costs, encouraging continued technological advancement and improvement, and maintaining harmonization of the essential elements of the food label.

I assume most will agree that public policy will be best served if the proposals operate to encourage the development and marketing of nutritionally improved foods rather than hinder such efforts. We are concerned that the descriptor proposals, which mandate additional statements to appear on the principal display panel, including burdensome type size and placement requirements, will discourage use of appropriate descriptors and may even inhibit development of such products. The agencies repeatedly recognize the use of accurate nutrient descriptors as a method of communicating to the consumer. However, under the present proposals, the labels of products on which descriptors appear, particularly comparative descriptors such as "light" or "reduced," will be so burdened with qualifications that the products may appear to be less desirable than their traditional counterparts. We understand the impulse to supervise all elements of the label;

however, this impulse should be restrained to allow industry to market these nutritionally modified products as the desirable alternatives which they are. The nutrition detail should be reserved for the information panel.

We should not underestimate the ability of the consumer to learn to use and understand the nutrition information panel. Many elements of these proposals imply a concern that the consumer will be unable to understand or apply the information communicated. In light of the cost and effort being expended to provide this information, that is an incredible admission; and one to which we do not subscribe. The consumer's ability to ultimately utilize the labeling to his full advantage requires that he read and understand the nutrition information appearing on the information panel. The education effort will be severely hampered if we require selected elements of that information to be scattered piecemeal at other label locations, thus discouraging reliance on the full nutrition disclosure. We must adopt a labeling format which will reward the consumer who is willing to be educated.

I want to specifically commend the efforts of the agencies to modernize product nomenclature. The nutritionally modified food standard proposed by FDA is a major step in encouraging the development of innovative, nutritionally improved products. It provides industry the opportunity to communicate the nature and benefit of new products as a function of the product name without the use of confusing and uninformative qualifiers such as "substitute" and "imitation."

A continuing concern of industry will be implementation, both from a cost and a feasibility standpoint. There is general agreement within the industry that the cost of the initiative has been underestimated. Implementation within the timeframe mandated by the Nutrition Labeling and Education Act is also conceded as impossible to achieve. The infrastructure necessary to provide the required analytical work and to physically design and print the labels simply does not exist, regardless of whether the additional year provided for in the Act is granted. We cannot even begin the task until we know the format and information to be required, which I doubt will be determined much before November, 1992. These are issues which I believe the agencies also recognize and will be addressing at an early date. This is critical, given that it will be very difficult to organize a compliance program when it is obvious that compliance will be impossible.

Unfortunately the present proposals have left out a critical piece of the puzzle, the nutrition information format. There has been a continuing debate as to whether the format should be qualitative, i.e., classing foods as "good" or "bad." In

general, industry feels it is essential that the format provide quantitative information which will not require continual or radical modification as our knowledge of the relationship between diet and health increases. It would be unfortunate to develop a format which would attempt to evaluate the relative benefit of foods based on the limits of our knowledge in the year 1991. We must recognize that our knowledge of the relationship between diet and health is in its infancy. We must adopt a format which not only accommodates, but embraces new knowledge and information as it develops. We cannot require wholesale label changes with each new scientific finding, nor can we reject future findings simply because an antiquated format will not accommodate the information.

I don't want to leave the impression that the industry attitude is negative regarding this initiative. Most of industry favors mandatory nutrition labeling. Industry recognizes the need to modernize the food label and the regulations governing food labeling and fully supports the need to provide better and more consistent nutrition information to consumers. In addition, the initiative has clearly established that food composition and food labeling is a matter of national policy to be governed by Federal regulations; a concept long endorsed by industry and regulators alike.

I have referred to a few examples of issues which must be resolved before these proposals become final. We are presently in the middle of a process which has taken several years and presumably will take several more years before all issues are resolved. Industry will continue to cooperate with and contribute to that process to achieve the mutual goals of better products, better communication and an informed consumer.



NUTRIENT CONTENT OF FOODS IMPORTANT TO HEALTH

Jacqueline Dupont* and Gary R. Beecher†

*National Program Leader for Human Nutrition

ARS/USDA, Beltsville, Maryland

†Research Leader, Nutrient Composition Laboratory

BHNRC/ARS/USDA, Beltsville, Maryland

Dietary Guidelines for Americans are recommended by the USDA and the Department of Health and Human Services to help people make food choices that will provide all the essential nutrients and an appropriate level of energy. Because we don't know everything that is in food and how all of the components contribute to health, and because of the pleasures of eating foods that have good taste and social meaning it is of first importance to EAT A VARIETY OF FOODS. But, at the same time we must MAINTAIN A HEALTHY WEIGHT. Those two needs may sometimes conflict with each other and that is one reason we are advised to CHOOSE A DIET LOW IN FAT.

Consumers find it difficult to make those choices, partly because it is hard to know where the fat is found in foods. Food producers and marketers are modifying foods to help consumers find appropriate choices. It is important to understand how the food modifications affect the amount of fat and the amount of calories in foods.

There are two parts to the understanding of energy value of food (Figure 1). The first is DENSITY. Gravity determines density. Things with solidly packed molecules weigh more than those that are airy because of the force of gravity--so, one way to dilute calories per serving is to mix in a lot of air.

The second part of energy value is ENERGY DENSITY, the amount of calories obtained from the energy-yielding nutrients, fat, carbohydrate, and protein. Fat has 9 calories per gram and carbohydrate and protein each have 4 calories per gram. Obviously, one can consume 2.25 times as much volume of carbohydrate or protein as fat to get the same number of calories. Some parts of food have zero calories--those are water and fillers.

So, to have a food with fewer calories per serving, one can dilute fat with air or water (diet margarine); substitute a carbohydrate or protein for fat; add air to protein (meringue) or water to

protein (jello); or water to carbohydrate (potato, rice, pasta); or add a no-calorie filler (some fibers). To keep water from separating from the food, gums, starches and proteins may be added. Combinations of all of these processes are being used to provide a great variety of reduced calorie meat products, desserts and main dishes of many kinds.

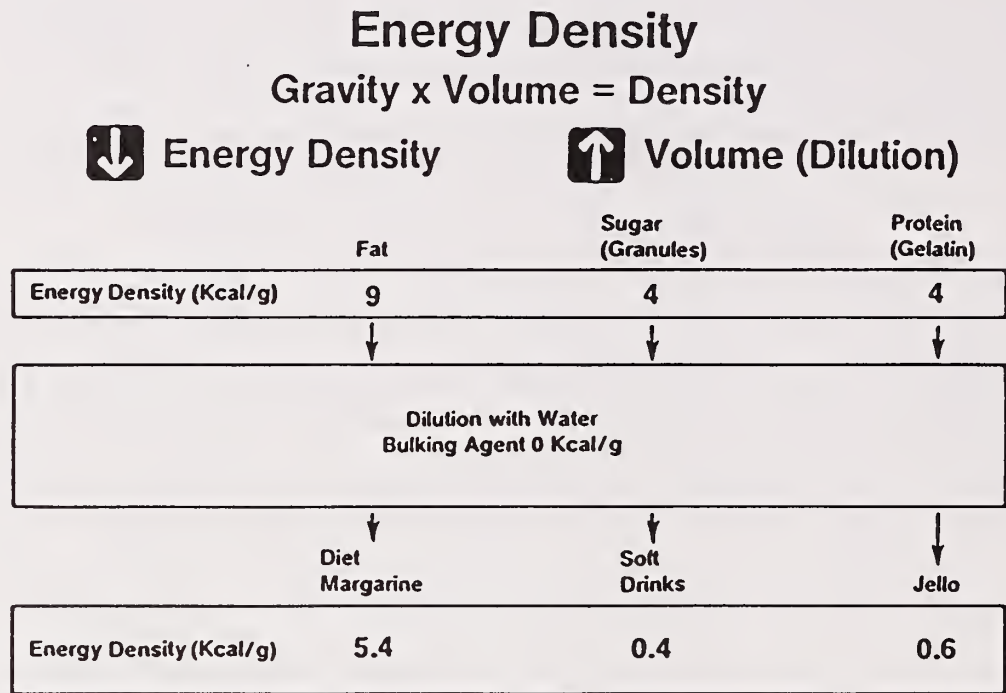


Figure 1. Definition of energy value of foods.

These formulations combine the aspects of DENSITY as defined by gravity and ENERGY DENSITY as determined by the combination of 9, 4, and 4 calories per gram of food components. They present problems to the people responsible for providing information about food composition to consumers. There is a need constantly to analyze every new food that is formulated for its energy value, availability of the energy to the consumer, and the effects of the formulation on availability of all the other nutrients in the particular food and other foods consumed with it.

How do we CHOOSE A DIET LOW IN SATURATED FAT? There are some general guidelines about relative amounts of saturated fatty acids in foods, and they must be interpreted along with the information about total fat. To make sound estimates of saturated fatty acids will require the consumer to read labels, and for the food supplier to be able to put accurate information on the label! That means that food scientists must provide accurate and reliable data and the responsibility for that requires continuous development of

better and more efficient methods, training of technicians, and monitoring quality of performance.

We should CHOOSE A DIET LOW IN CHOLESTEROL (Figure 2). Why is that difficult? Only animal food products contain cholesterol, but the numbers keep changing. Old methods to measure cholesterol measured a group of sterols including cholesterol and other compounds, so the total value for an egg was 274 mg. New instruments and their efficient use have enabled us to separate all those different compounds and give accurate values to each one, so now we know that the same egg actually has 213 mg cholesterol, and small amounts of sitosterol and other plant sterols. It is important to know the true value of cholesterol, but all those other compounds are important too, and must be included in our data bases.

Diet Low in Cholesterol

Improved Analysis

Reduced Cholesterol in Eggs

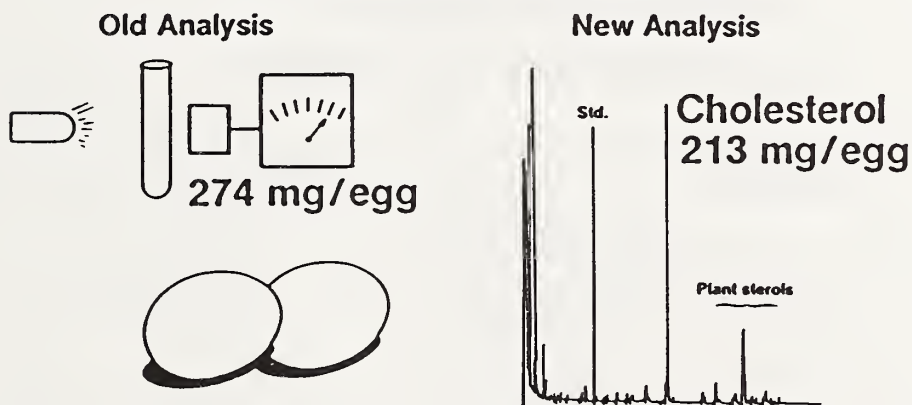


Figure 2. Explanation of changing quantitative values of sterols in foods related to advancement of technology.

CHOOSE A DIET WITH PLENTY OF VEGETABLES, FRUITS, AND GRAIN PRODUCTS. Why is there so much emphasis on such an old saw? Epidemiological research has shown that people who choose such diets are less likely to have cancer and other diseases than those people who eat a less varied diet. Controlled dietary studies have helped to clarify what foods and which components of foods contribute to protection from different diseases. Because of that knowledge we must develop reliable and efficient methods to analyze

all of the protective foods so that better informed choices can be made within the preferred habits of our diverse population. We are now making many of these measurements. For instance are the minerals, Boron, Molybdenum, Nickel and Vanadium, dietary essentials and how much is in foods? We are working intensively to devise scientifically strong, but technically feasible and efficient methods for many factors that may be shown to be extremely important in protection from disease. In relation to cardiovascular heart disease we need to provide qualitative and quantitative values for dietary fibers, omega-3 fatty acids, saponins and tocotrienols. To reduce cancer risk we need to increase consumption of fruits and vegetables and learn their quantitative contributions of carotenoids, flavonoids, phytates, phyto-estrogens, phyto-sterols, saponins and trypsin inhibitors. We must learn by experimentation how these factors are protective or harmful.

All of our research is directed to determining the relationships between food and health (Figure 3). Food provides nutrients that interact with our genetic potential to achieve health. All of the modern biological sciences provide links that describe our nutritional status and its impact on health.

Relationship Between Food, Nutrition and Health

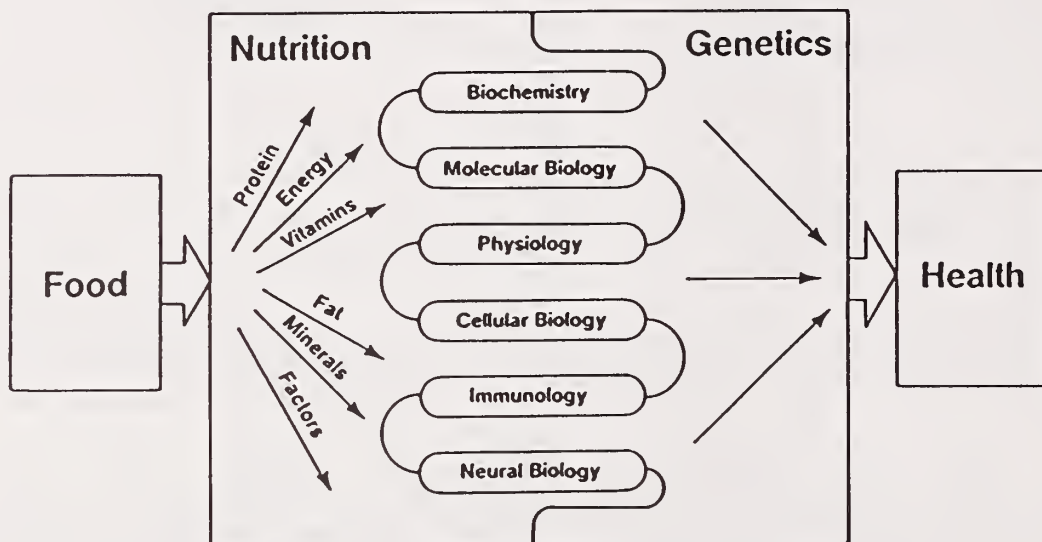


Figure 3. Current Understanding of relationship between nutrition, genetics and the basic sciences as they are influenced by food consumption to modulate health status.

We have the data bases for the nutrients that have been known for 40 years and longer. Now we are compiling the knowledge to build new data bases to answer the dietary guidelines questions of the coming decades. These newly recognized factors will take a position in the spectrum of nutrient classes. We propose that a new name be given to this class of nutrients. The words vita - Latin for life and Alimin - Latin for nourishment, together make the word vitalimin, factor of life nourishment (Figure 4).

VITA = Life

ALIMIN = Nourishment

VITALIMIN = Factor for Life Nourishment

Figure 4. Proposed nomenclature for a class of nutrients in foods that are up and down regulators of life processes.

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ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
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Outlook '92

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THE SECOND CENTURY OF FOOD COMPOSITION RESEARCH

Sue Ann Ritchko
Administrator, Human Nutrition Information Service

Good morning. We are here today to talk about the future, and I want to tell you about the future of one of the bases of nutrition research and education-- food composition.

To me it seems that the great challenge in working with food composition lies in the radiating technology that makes our world ever smaller and that makes our efforts ever smarter. Let me tell you about something that happened last month to illustrate the point.

Betty Perloff, one of our food composition scientists, was participating in an international conference. She didn't have to fly anywhere; she was sitting in Washington connected to an international group in Sweden by television. As they discussed electronic exchange of information, one of the people in Stockholm went to his computer and called up Internet, an international electronic network. Through Internet he accessed our Nutrient Data Bank electronic bulletin board in Maryland and was back in the videoconference in less than 10 minutes.

This illustrates the potential we have today--potential that is already being realized--for broadening the population of users of food composition data; for deepening the kinds of uses of the data; and for accelerating its dissemination.

In the fall of 1989, at the National Education Summit, President George Bush, in conjunction with our nation's Governors, declared that by year 2000, all children in America will start school ready to learn. One of the objectives of this goal is to provide our children with proper nutrition so that they can arrive at school and begin each day with healthy mind and bodies capable of learning.

What better role can we at HNIS play in our country's future than to provide the most current research on food composition, so that those people, parents and educators, and the institutions which are responsible for our children's development can provide them with nutritious diets that enable them to meet the challenges of the next century.

As we prepare to meet the President's objective, we are fortunate to be led by Secretary Madigan who has emphasized the role of nutrition education for USDA. He has established within the Department the Nutrition Education Task Force, a working group of the eight agencies in the USDA that are responsible for the nutritious well being of Americans.

The Secretary, through the Task Force, will make available the tools and training to enable school food service programs, parents and educators to adjust to the Dietary Guidelines. We at HNIS rededicate ourselves to the most accurate and up-to-date food composition guides, which are essential for nutrition studies, dietary appraisal and guidance.

Last year President Bush signed into law the National Nutrition Monitoring and Related Research Act of 1990 which is designed to improve our National Nutrition Monitoring System. We, at USDA, in close cooperation and coordination with our colleagues in nutrition monitoring at the Department of Health and Human Services, have been very busy implementing the requirements of the Act.

One of our first priorities is the development of a proposed Ten-Year Comprehensive Plan for Nutrition Monitoring and Related Research. The Plan lays out direction and activities in nutrition monitoring that the Federal government will take for the next decade. Food composition and nutrient data bases are one of the areas that are covered in the Plan. The Ten-Year Plan was published in the Federal Register in late October for a 90-day comment period. Comments are due by January 22, 1992. If you have not done so, we encourage you to review the Plan and give us your feedback. We have a few copies of the proposed Plan here today.

Another requirement of the Nutrition Monitoring Act was the establishment of a National Nutrition Monitoring Advisory Council to provide scientific advice and guidance in nutrition monitoring to the Secretaries of Agriculture and Health and Human Services. There are 9 members on the Council, 5 appointed by the President and 4 by Congress. Last week, President Bush announced his nominations. They include:

Dr. David Call, Dean of the College of Agriculture and Life Sciences at Cornell University;

Dr. Shiriki Kumanyika, Associate Professor of Nutritional Epidemiology in the Department of Nutrition at Pennsylvania State University,

Dr. Suzanne Harris, Director of the Human Nutrition Institute at the International Life Sciences Institute in Washington, D.C.,

Charles James, President and Chief Executive Officer of C.H. James and Company in Charlestown, West Virginia, and

Helen Lee of California who has served as a Member of the Vocational Nurse and Psychiatric Technician Examiners Board.

Food composition data are the foundation of all nutrition research and education. Nutrition researchers and educators must have accurate and current information about what foods people eat, but they cannot guide consumers to healthier diets unless they know what is in those foods. Food composition data give nutrition researchers and educators the basic tool they need to determine what nutrients people get; and what they don't get enough of; and what they get too much of. On a foundation of food composition, nutrition researchers and educators have expanded knowledge and awareness of nutrition and its importance to overall good health, and will continue to do that in the future.

1992 marks the hundredth anniversary of published food composition data in the United States. In 1892, W.O. Atwater and his associates published food composition tables that provided data for protein, water, fat, ash, carbohydrate, and calories in about 200 foods. The urgency for new food tables with data for additional nutrients was made more acute by World War II. The armed forces and civilian groups needed new nutrient information as food supplies were being rationed. The USDA, in cooperation with the National Research Council prepared tables of food values which provided data for 11 nutrients covering a total of 275 food items. Since then, the number of foods has increased to more than 6,000 items in the current revision of Agriculture Handbook No. 8. To the food components reported in 1892, Handbook 8 adds values for 9 minerals, 9 vitamins, 19 fatty acids, cholesterol, phytosterols, and 18 amino acids.

Next June, we will be celebrating a hundred years of food composition tables at the 17th National Nutrient Databank Conference in Baltimore June 7-10. It will be co-hosted by the University of Delaware and the Human Nutrition Information Service. I would like to invite each of you to attend. We have flyers on the conference here today.

What, then, of the future?

As we move through the 90's, concern is increasing about non-nutrient components in foods: substances such as caffeine, theobromine, carotenoids that have no vitamin A activity (such as lycopene and lutein), organic acids, individual plant sterols, and trans-fatty acids. We need more data for these components, from more foods. However, there is a problem. In order to provide data that is reliable and accurate, we must know that reliable methods of analysis are available. More research on analytical methods is needed before we can compile data of the quality our users demand.

Trace minerals are another area that will receive more attention in the future. There is already interest in chromium and molybdenum. Other trace minerals that could gain significant nutritional attention in the future include tin, aluminum, nickel, iodine, vanadium, arsenic, lead, and boron.

There has recently been more concern about nutrients with antioxidant activity--vitamin C and vitamin E. The importance of vitamin K in the diets of cardiac patients has received considerable attention lately. We need more extensive information on the amounts of these vitamins in foods.

On the other hand, some vitamins present no current health concern for most of the population--thiamin, riboflavin, niacin, pantothenic acid. These nutrients are not included in nutritional labeling, and fewer labs are generating data.

Many users need analytical data on individual carbohydrate components--different sugar fractions, starch, soluble and insoluble dietary fiber. We need faster, more economical methods of analyzing carbohydrates before we can report them individually.

While the menu of nutrients and food components that we need to report increases, so does the menu of foods for which we need to report data.

As the number of foods with thorough analyses grows, we can begin to look at area-specific or ethnic foods such as those indigenous to Hawaii and Alaska, or to specific population groups such as Native Americans, or residents of nursing homes.

A new class of foods are those made with unconventional ingredients to reduce fat, cholesterol, or calories. These foods include table spreads, salad dressings, baked products, and frozen desserts containing fat substitutes or replacements such as gums, carbohydrate-based, protein-based, and other synthetics instead of the usual fats. This kind of substitution can obviously make a considerable difference in calories and fat, but also in the content of many other nutrients.

Among the more traditional foods, we need to find out if, and how, nutrient content changes over time. The amount of vitamin A in sweetpotatoes, for instance, has increased considerably since the 1960's because of the development of new varieties. Regular market studies for such foods as dairy products, eggs, poultry, and meats can help discover some of these changes. Monitoring of "key" foods will indicate where important changes may be taking place. "Key" foods are the 200 to 300 that together contribute up to 80 percent of the nutrients significant to public health.

In the more technical areas, we continue to need more research on analytical methods to improve precision and reliability of our data. We will continue to review nutrient retention values and yield factors on a regular basis. We want to improve the exchange of nutrient data between Government agencies and to increase voluntary contributions of food composition information by the food industry.

As important as anything we do in assembling and evaluating food composition data is this: We must make the information available to those who need it. We publish food composition information in printed reports and in computer-readable forms. We maintain the Nutrient Data Bank Bulletin Board that I mentioned earlier. We publish special reports for specific purposes, and we publish bulletins for the general public.

And we will continue to look for ways to improve how food composition information is disseminated. The unending improvements in computers and communications technology are an important part of this, of course. But we want to explore every pathway that we can find to provide current and accurate food composition information to whomever needs it.

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FUTURE FOODS AND FADS

Gilbert A. Leveille, Ph.D.
Vice President, Research & Technical Services
Nabisco Biscuit Co.

Our future food supply promises to be unlike any that has come before. Consumer sophistication in the diet and health area and technological advances will dictate unprecedented flexibility; that is, the ability to cater to diverse and distinct market niches, including those concerned with diet and health.

Importantly, though, along with the ability to provide "new improved foods to meet the needs of everyone", comes the challenge to prepare and inform consumers about their new food options. Only informed consumers can successfully incorporate future foods into a healthful eating pattern. And, only informed consumers can make future foods the market success they must be to drive further initiatives in healthful food development.

I would like to give an overview of what some of these future foods might be, and the history behind the trends. Then I would like to bring to your attention an example of how the current food labeling reforms (1 & 2) fail to cover a "near future" labeling contingency that threatens to confuse and frustrate consumers--that of non-caloric, fat-based fat substitutes.

FUTURE FOODS: WHAT FORM WITH THEY TAKE?

Our food suppliers have already seen to it that nutritious convenience foods are readily available to the hassled and harried among us, as well as to the just plain pampered. For example, microwave technology is found in the majority of American households and "Zapping" has allowed for the proliferation of balanced, prudent, frozen and sous vide meals in supermarkets, and gourmet take-out entrees that shun fat, cholesterol, and sodium. The need for quick, attractive, and tasty foods that help consumers adhere to a healthful overall eating pattern is here to stay.

In this category as well are foods made with macronutrient replacements, such as fat substitutes, high-intensity sweeteners, bulk fillers, and dietary fibers. While the connection between excess macronutrients and degenerative disease is well-established in consumers' minds, continued adherence to a healthful diet has not been possible for many. To meet current and future needs for aids to achieve healthful eating, the food industry has put a high priority on developing products made with nutrient replacements. According to one estimate, more than 30 companies internationally have been engaged in sweetener R&D efforts and at least 15 are developing fat replacements. (3)

As a result, a wide range of fat replacers are currently on the market or in the various stages of development and regulatory (4) approval. For example, there are carbohydrate-based fat replacers including cellulose, gums, dextrans, maltodextrins, modified food starch, and polydextrose. There are also fat replacers based on protein, and even those based on a variety of non-caloric or reduced-calorie fats.

The demand for lower-fat products has grown so extensively that ~67 percent of adult Americans now consume low or reduced-fat foods and beverages. Moreover, the vast majority would like to see additional low-fat product choices that are not yet available (5). It's no surprise, then, that fat substitutes alone are predicted to be a \$375 million category by 1994.

Sugar replacers are also big business. A survey by the Calorie Council (5) found that ~100 million Americans now consume low-calorie foods and beverages. This number is up by 23 million from 1986. (6)

On the other side of the diet and health coin are natural, organic ingredients and products. This consumer niche is concerned about pesticides and other synthetics, such as sugar and fat substitutes, in the food supply. To meet the needs of this group, more and more organically grown and naturally prepared products are finding space in both health food stores and mainstream supermarkets. In fact, a government (7) report notes that annual sales of processed and fresh organic foods are now in excess of \$1 billion--up from \$174 million ten years ago.

This will persist in counterpoint to the proliferation of more fully processed foods as safety and environmental issues attract even more consumer concern.

What consumers leave out of their diets (i.e., their avoidance behavior) is only half of the diet and health story, though. Putting in adequate vitamins, minerals, fiber, and even phytochemicals is the other half. A class of food products has emerged for consumers who want to have their supplements and eat them too. The foods in this category are alternately referred to as "nutraceuticals," "functional foods," or "designer foods". These products are defined as edibles that have been formulated beyond basic nutritional content to prevent or cure disease. For example, adding antioxidants, fiber, or broccoli extracts to existing or new food products, exclusively for consumer health effects, qualifies foods for this category.

Nutraceutical/functional/designer foods currently are the rage in Japan and Germany (8). Analysts see a rosy future for this food category in our country as well (9). The market was estimated at \$2.5 billion in 1988 and is projected to reach \$7.5 to \$9 billion by 1995. Interestingly, a Gallup poll indicates that 87 percent of those Americans surveyed favor government support for nutraceutical research (10). In fact, our government is currently considering designer food research under the auspices of the National Cancer Institute (11). It's focus is on the effects, on cancer, of non-nutritive plant compounds (anutrients/phytochemicals) incorporated into processed foods.

Another distinct diet and health market niche that is sure to come our way is the individualization of consumers' diets to help control each person's unique, genetically determined health destiny. Within the next ten years, more or less, enough will be known about genetic markers for degenerative diseases to allow health professionals to create individualized diet plans on the basis of their client's genome (12). This individualized approach will make dietary adherence more compelling and the implementation will definitely require more specially formulated food products.

THE HISTORY BEHIND THE TRENDS

It is the growing awareness among both scientists and the public of the relationship between diet and chronic disease that catapulted such far-reaching changes in our food supply. This growing awareness culminated in the release of several reports from government and professional organizations containing dietary recommendations for the general public. Most notable among these reports are: The Surgeon General's Report on Nutrition and Health (13); Diet and Health: Implications for Reducing Chronic Disease Risk (14); Improving America's Diet and Health (15); and, Dietary Guidelines for Americans (16).

All of these reports support and promote the consensus among the nutrition community that Americans should: 1. attain and maintain a healthy body weight; 2. reduce fat, saturated fatty acids, cholesterol, and sodium consumption; and, 3. increase complex carbohydrate consumption.

Another important message to emerge is that of balance, variety, and moderation in food selection. This message reinforces the idea that there are no "good" foods or "bad" foods. Rather, every food has a place in a nutritious total diet when it is eaten in moderation.

In response to these reports, and the often-publicized findings they are based on, the American consumer has been clamoring for innovations in food technology to help in selecting low-fat, low-calorie, high-complex carbohydrate diets. In response to consumer demand for healthful alternatives, more than 10 percent of the ~10,000 new food product introductions over the last two years were lower in fat or calories (17).

By responding to consumer health needs, the food industry is helping the public to implement the dietary recommendations. These changes in the food supply are in line with directives from the National Academy of Sciences for the private sector as well (15). The directives include "increasing the availability of a wide variety of appealing foods that help consumers meet dietary recommendations." The private sector is encouraged to develop new products and to modify existing ones, as well as to gear marketing efforts to make these products user-friendly for everyone. The directives also include "promoting dietary recommendations and motivating consumers to use them in selecting and preparing foods and in developing healthful dietary patterns." Here, the private sector is encouraged to collaborate with other sectors to develop education and information programs and materials.

A FUTURE FOODS LABELING DILEMMA

What we have seen so far is that both consumer sophistication in the diet and health area and technological advances in the food industry have led to welcome changes in our food supply. Yet, consumer demand and technological advances can frequently outstrip consumer understanding. Unfortunately, if consumers can't assess a food's nutrition profile or choose the appropriate combination of foods to fashion healthful diets, America's health status won't change--no matter how many helpful products are on the market. Without adequate knowledge and understanding on the part of consumers, an education discontinuity results that inevitably leads to consumer confusion. This confusion, in turn, can dilute the effectiveness of many technological advances and act as a disincentive to develop others.

The new proposed nutrition labeling regulations are designed to minimize the discontinuity between consumer need and consumer action. Nutrition labeling reform has the following goals, as summarized by the FDA: 1. to clear confusion; 2. to help consumers make healthy choices; and, 3. to encourage product innovation.

Yet, there is one area on the food label relevant to future foods that has not been adequately addressed by the current proposals. That area concerns quantity disclosures and descriptors for foods made with non-caloric macronutrient replacements.

For example, the proposed regulations suggest that total calories, calories from fat, total fat, saturated fat, cholesterol, total carbohydrates, complex carbohydrates, sugars, dietary fiber, protein, sodium, vitamins A and C, calcium, and iron must be listed on a per serving basis. What message will the consumer get, though, if all or some of the fat in a food is a non-caloric fat replacer; or, if all or some of the carbohydrates in a food are from non-caloric carbohydrate replacers?

Let's look at mayonnaise. A one tablespoon serving has 99 calories, 99 calories from fat, 11 grams of total fat, and 1.2 grams of saturated fat. If this product were re-formulated with a fat-based, non-caloric fat substitute, the label would still list 11 grams of total fat yet the calories would be close to zero -- as would the calories from fat. What would a consumer make of this?

Moreover, if the product were re-formulated with a partially absorbable, highly saturated fat (such as stearic acid), the label would be even more confusing. What is a consumer to make of a reduced-calorie mayonnaise that has the full 11 grams of fat, and highly saturated fat at that? This mayonnaise is undoubtedly a healthier alternative to traditional mayonnaise but the consumer will be hard-pressed to realize this from the label.

The descriptors won't be much help either. According to the proposals, any claims about fat are based, in part, on the amount of fat per serving. To qualify as "Fat Free", a product must contain <0.5 gm of fat per serving, provided that it has no added ingredient that is fat or oil. To be "low-fat", 3 gm or less of fat per serving and per 100 gm of food must be met. A fat-based, non-absorbed fat is considered by analysis a fat in foods -- even though it will not be treated as a fat by the body.

Clearly what is needed is a means of labeling "available" fat, fat calories and saturated fat. This requires an appropriate test to quantitate these values in a consistent, reproducible manner. Obviously an appropriate revision in the regulations will be necessary to accommodate these new ingredients in order to permit consumers to effectively use products containing them to achieve more healthful diets.

CONCLUSION:

Future foods will certainly wear many different hats to meet the varied dietary needs consumers have. It is also clear that future foods will be here sooner than we think. Both the market demand and the technological know-how are well on their way to defining and delivering such a food supply.

We must be careful to keep consumers up-to-speed on how to enjoy their many future food options. This involves keeping the food label flexible enough to educate future consumers as successfully as we hope to educate the consumer of today.

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SCHOOL LUNCH AND THE DIETARY GUIDELINES

Ann Chadwick
Director, Office of the Consumer Advisor

- As Consumer Advisor for the Department of Agriculture, I act as liaison between American consumers and the Department. One part of my job is to represent consumers to USDA; the other part is to represent the Department of Agriculture to consumers. In other words, I help the Department stay current about what's on consumers' minds; and I help inform consumers about USDA initiatives that could affect them.

Nutrition is a priority consumer issue for USDA and for me, both as Consumer Advisor and as a nutritionist.

- Today, I will discuss how USDA is implementing the Dietary Guidelines for Americans in the National School Lunch Program (NSLP).

School Lunch

- The National School Lunch Program is operated by USDA's Food and Nutrition Service (FNS); it provides lunch to nearly 25 million children each school day. It is one of the largest food operations in the country, on a par with the major fast food companies.
- All school lunches are federally supported. Even "paid" lunches are supported with 30 cents each in cash and commodities. Children who pay "full price" for their lunch are charged about \$1.00. Local prices vary. About half the children who eat school lunch daily are from low-income families and receive their meals free or at a reduced price.
- The Food and Nutrition Service provides federal funds for school lunch, along with technical assistance and dietary guidance. In school year 1990-91, FNS contributed about \$3.9 billion to the NSLP. This included over 1 billion pounds of commodities.

Dietary Guidelines

- A primary goal of FNS is to make sure school lunches comply with the Dietary Guidelines issued by USDA and the Department of Health and Human Services (DHHS). The 1990 edition of the Guidelines recommends that Americans eat a variety of foods and maintain a healthy weight. They also stress the need for Americans to eat diets with plenty of vegetables, fruits and grain products and low in fat, especially saturated fat. And they suggest moderate use of sugar and salt.
- With regard to fat, the Dietary Guidelines recommend a diet of 30 percent or less of total calories from fat for adults and children over the age of two. It is important to note that this recommendation of 30 percent or less of calories from fat is intended to apply to the total dietary pattern over time--not to a single meal or food. We are working to achieve that goal in the school lunch and school breakfast programs.
- We want to assure that school lunches are nutritious and well balanced. A primary way we do that is by requiring that all school lunches meet the USDA meal patterns. They stress serving a variety of foods to reach nutrient goals. They are designed to provide, over a period of time, approximately one-third of a student's Recommended Dietary Allowance (RDA) for key nutrients.
- Following the meal patterns, school lunches offer each student five items: a specific amount of meat or meat alternate, two or more vegetables or fruits, whole-grain or enriched bread or bread alternates, and fluid milk as a beverage.

There are five school lunch meal patterns--for children in kindergarten through high school.

Three Studies

- We have used the meal patterns for many years. We have conducted studies of dietary intakes, as well as other studies, to see how well they work.

A major study, conducted in the early 1980's, was the National Evaluation of School Nutrition Programs (NESNP). It examined the impact of school lunch on students' dietary intake of calories, sodium, protein, fat, carbohydrates, and various vitamins and minerals.

We compared students who ate a school lunch with those who ate a lunch other than school lunch. We found that students who ate school lunch got greater percentages of RDA's for calories and nine of eleven nutrients studied.

- The study also showed that about 37-40 percent of the calories in school lunch came from fat and 44-46 percent came from carbohydrates. To lower the fat content, a shift in frequency could be made from higher fat meats and cheese to lower fat foods.

This poses a challenge since shifting to lower fat items also reduces a significant calorie source for growing children. One way to maintain calories in the school lunch program and to follow the dietary guidelines is to increase the servings of fruits, vegetables, and whole grains.

- Besides the National Evaluation of School Nutrition Programs, we've recently conducted an informal study of 612 menus taken from elementary schools across the country. This study showed that some of the more popular meats and meat alternates, such as ground beef, poultry, and cheese, are relatively high in fat. To reduce fat, schools need to serve more poultry without the skin, fish that isn't fried, and beans.
- The study also showed that children don't eat nearly enough vegetables in school lunch. Three vegetables--potatoes, tomatoes, and lettuce--make up 63 percent of the vegetables children eat in school lunch. We need to significantly increase the variety of vegetables eaten in the school lunch program.
- In the area of breads and bread alternates, the study showed that schools are not serving enough whole grains. To give students more fiber, schools must serve many more whole-grain products.

And, increasing complex carbohydrates to replace calories from fat will require students to learn to eat more foods such as dry beans and peas, vegetables, corn, pasta, and rice.

- In addition to the two studies I've mentioned, a Dietary Assessment Study is currently being conducted. It is the first major school nutrition research since the NESNP study. This study is assessing the nutrient content and dietary impact of the school lunch and breakfast programs.

The study will examine: the nutrient content of meals served to children in schools, and the nutrient content of

meals selected by children; it will also look at what foods children actually eat; and it will gauge how important school meals are to the nutrients children receive in their total diets.

In addition, the study will assess how the dietary contributions of the school nutrition programs have changed over the last decade.

- Four thousand students and 600 schools are participating in the study, so it will be representative of all students and all school meals nationwide. It will also include schools not participating in the school nutrition programs.

Data will be collected from November 1991 through May 1992. The results will be published in December 1992.

Menu Modification Grants

- Besides learning more about the dietary intake of students, we're also combatting high fat and sodium in school lunch by modifying menus. We're currently in the third year of 3-year grants we've made to five school districts to help them modify their menus.

In these districts, we're testing changes that typical school districts can make to reduce fat and sodium in their meals. For the most part, the grantees are taking existing menu items that children like and are trying to make changes in them. The changes are in recipe ingredients, cooking method, and product specifications.

For example, schools are:

- * Substituting ground turkey for beef;
- * Substituting low-fat yogurt or buttermilk for sour cream or mayonnaise;
- * Decreasing the amount of salt in baked goods;
- * Draining fat from browned ground beef;
- * Not adding salt or butter to vegetables while cooking;
- * Specifying lower fat and sodium for ground beef and processed meat products; and,
- * Testing lower fat chicken nuggets.

- At the end of this school year, FNS will evaluate the demonstrations. We have already learned that students have accepted most of the changes, but we won't know if the projects are successful until we learn whether the schools keep their customers. That is the true test of successful changes.

Dietary Guidance

- The information we learn from studies and grants is very helpful in implementing the dietary guidelines. At the same time, we need to get the word out to school food service workers and managers on what they can do to put the guidelines into practice.
- We're working with the Department of Health and Human Services on a publication called Nutrition Guidance for Child Nutrition Programs. It is being developed for cooperators in all child nutrition programs, from food service directors of large multi-unit school systems to family day care providers caring for a few toddlers--about 275,000 copies in all.

We will distribute it next spring. It will give food service workers the information they need to improve children's health by offering meals that reflect the dietary guidelines.

- We are committed to providing schools with all the tools they need to comply with the Dietary Guidelines by 1994. In a press conference last September, Secretary Madigan said, "I can assure you that by FY 1994 all school food service personnel in the United States will have the tools and the training they need to improve the school lunch program to meet the dietary guidelines."
- To support this commitment, federal funding for the Nutrition Education and Training Program (NETP) has been increased by 33 percent for 1992. We are emphasizing to states the need for increased efforts in this program, which provides nutrition education and training for school food service workers, teachers, and students.
- Finally, a USDA-sponsored Food Service Management Institute (FSMI) at the University of Mississippi has now been established. The main purpose of this national institute is to help school lunch managers improve the quality of meals served in child nutrition programs.

In its first year of operation, the institute established its physical facilities and hired personnel. In this, its second year, it has begun to provide consistent training and research-based information to operators of child nutrition programs, including school lunch.

The Food Service Management Institute has long been sought by leaders in the school lunch program. It is now a reality and we expect it to be a substantial benefit in helping school food service managers provide more healthful meals to children.

Commodities With Lower Fat

- USDA has also worked to provide schools with more healthful commodities for school lunch. We have reduced fat, salt, and sugar in over 60 USDA commodities provided to schools. For example:
 - * Frozen ground turkey is now available with average fat of 11 percent.
 - * We're testing the acceptability of turkey burgers, also with average fat of 11 percent.
 - * Bulk ground beef and beef patties with 20 percent fat are available; and last year, a ground beef patty with 10 percent fat was tested in six states. We'll provide low-fat ground beef patties as schools request them.
 - * Frozen diced chicken is now offered to schools.
 - * Fish products have been added, including tuna, salmon, and fish nuggets, when available.
 - * Part skim milk mozzarella cheese is now available.
 - * No animal fat or highly saturated vegetable fats may be used in commodity processing. And,
 - * Foods with complex carbohydrates are available, including whole wheat flour, bulgur, brown rice, dried fruits, pasta products, dried bean products, and fresh fruit.

Conclusion

- In summary, the National School Lunch Program has had a significant and positive effect on childrens' health for many years, and we are working to make it even better. To reach our goal of making school lunch comply with the Dietary Guidelines, we need the help of all those involved: the states, schools, school lunch managers, food producers and processors, parents, and the children who select and eat the food. We're counting on everyone to help us meet our goal.

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ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture

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Outlook '92

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RESEARCH ON WIC PARTICIPATION EFFECTS ON MEDICAID COSTS

Janice G. Lilja

Director, Office of Analysis and Evaluation
Food and Nutrition Service

Good afternoon. I'm very pleased to be able to share with you the findings of USDA's study of "The Savings in Medicaid Costs for Newborns and Their Mothers from Prenatal Participation in WIC." The title is a mouthful, but the results of this study are very important, relevant, and timely. Recently this study was at the center of discussions about the domestic policy agenda--and as a result, it was featured prominently in the President's Fiscal Year 1992 Budget. It appears second--after the Headstart Program--in the section on preparing young children for school; it was also featured in the section on investing to prevent infant mortality, and was used by our Assistant Secretary to argue convincingly for a quarter billion dollar increase in this fiscal year's budget for WIC. The study helped document WIC successful performance outcomes. But we didn't stop there--we've expanded our analysis of this wonderful database. First, I'll explain these initial findings to you, and then I'll share some of our upcoming plans.

In brief, the study shows that for the 5 States studied, every \$1 spent on a pregnant woman's participation in WIC saved between \$1.77 and \$3 in Medicaid program costs during the first 60 days after delivery. These are striking and positive results. And because of the clear connections established between programs: (between WIC and MA, between WIC and prenatal care, between prenatal care and MA) and because of the types of financing and cost sharing involved in the programs, the results I'll describe today will have influence beyond the WIC program alone at both the Federal and State levels.

WIC/MEDICAID STUDY FINDINGS

Let me talk about the results in more detail.

The primary objective of the study was to determine the savings in Medicaid costs during the first 60 days after birth for

newborns and mothers due to participating in the WIC program during pregnancy. The secondary objective of the study was to examine the effects of prenatal participation in the WIC program on two important birth outcomes--birthweight and gestational age.

How did we go about this? Actually the study is a set of 5 indepth case studies of 5 States in a specific year. It's important to recognize that this is not a national study. The 5 States studied were: Florida, Minnesota, North Carolina, South Carolina, and Texas. The study period included all Medicaid births in 1987 for 4 of the States--Florida, Minnesota, North Carolina, and South Carolina--and all Medicaid births from January through June 1988 in Texas. In all, the study looked at over 105,000 births. Table 1 in your handout provides some background information on the five study States. Although only five States were included in the study, the selected States accounted for 18 percent of all U.S. births in 1987. Overall, these States provide some striking contrasts in birth outcomes and risk factors for adverse pregnancy outcomes. Minnesota in 1987 had a lower proportion of low-income women (11% were under 100% of poverty, and 25% were under 185% of the poverty line, which is the WIC Program's upper limit) and had birth outcomes that were more favorable than those of the other study States and indeed were substantially better than the U.S. as a whole. This contrasts sharply with the three Southeastern States and Texas.

It is important to realize that the study population for these nearly 105,000 births consisted of a very low-income group of women and that the socioeconomic characteristics of the study populations in five States were not the same during the study period. At the two extremes, Minnesota was covering pregnant women whose incomes were up to 88 percent of the poverty level, whereas Texas was covering only pregnant women whose incomes were up to 33 percent of the poverty level. Medicaid eligibility has expanded since then, starting in late 1987, but the full effect of these expansions was probably not felt until after the end of the study period. Thus, the Medicaid mothers and newborns in this study were very poor with incomes well below the WIC income eligibility limit of 185 percent of poverty.

ANALYSIS FINDINGS

Prenatal Care

Although there were differences across States, the characteristics of WIC and non-WIC women within each State were very similar in terms of age, race, marital status, and education. (Table 2) However, for one very important variable, the differences between WIC and non-WIC women within a State were large. This was prenatal care. (Table 3)

Prenatal care was measured using the Kessner index which combines information on the timing of entry into prenatal care and number of prenatal care visits in relation to the length of gestation. Inadequate care is defined as 4 or fewer visits. In all five States, Medicaid mothers who did not participate in the WIC program were approximately two to three times as likely to have received inadequate prenatal care as WIC participants. Overall, less than 10 percent of the WIC participants in the five study States received inadequate levels of prenatal care, in contrast to 22.4 percent of nonparticipants. WIC participants were also much less likely to have had no prenatal care at all than nonparticipants. For the study this meant that we had to be particularly careful to separate the effects of WIC from those of prenatal care in the analysis.

Medicaid Costs (Table 4)

The principal finding from the analysis of Medicaid costs is that for all 5 States, prenatal WIC participation is associated with substantial savings in Medicaid costs during the first 60 days after birth. The reductions in Medicaid costs for mothers and newborns together ranged from \$277 in Minnesota to \$598 in North Carolina. We report mother and newborn costs together because in most States, these could not be separated.

The estimated benefit cost ratios shown in Table 5 of your handout express the estimated savings in Medicaid costs per dollar of WIC program costs. All benefit-cost ratios are greater than one, suggesting that the benefits of prenatal WIC participation (that is, savings in Medicaid costs) exceed the costs of providing WIC benefits. For newborns and mothers, these estimates range from \$1.77 in Florida to \$3.13 in North Carolina, with values of \$1.83 for Minnesota and \$2.44 for both South Carolina and Texas. Thus, for every dollar spent on the prenatal WIC program, the associated savings in Medicaid costs during the first 60 days after birth range from \$1.77 to \$3.13 for newborns and mothers. This is separate from the effects of prenatal care.

We also looked at the effect of prenatal care on Medicaid costs, and found that again there are substantial savings. The analysis indicates that considerable additional Medicaid cost savings during the 60-day postpartum period were associated with receiving adequate or intermediate levels of prenatal care. Estimates ranged from \$267 for newborns and mothers in Florida to \$1,005 for newborns and mothers in Minnesota. For women who participated in WIC and received prenatal care, the two effects can be added. In the case of Florida, for example, WIC in combination with adequate care is associated with \$600 in reduced Medicaid costs. (Table 6)

Let's look in more detail at where these savings come from.

First let's look at Birth Outcomes (Table 7) - Prenatal WIC participation by Medicaid recipients increases birthweight and lowers the incidence of low birthweight (births of infants who weigh less than 2,500 grams, or 5.5 pounds). The average increase in birthweight ranged from 51 grams in Minnesota to 73 and 77 grams in Florida and Texas, to 113 and 117 grams in South Carolina and North Carolina, respectively. Similarly, the reduction in the percentage of women who gave birth to low-birthweight newborns ranged from 2.2 percentage points in Minnesota to 5.1 percentage points in North Carolina and South Carolina. But the story gets even more interesting for pre-term births. Because the most dramatic increase in birthweight for prenatal WIC participants relative to nonparticipants occurred with the newborns of the Medicaid women who had preterm births--where the gestational age of the infant was less than 37 weeks. The average increase in birthweight for a preterm birth ranged from 138 grams in Minnesota to 259 grams in South Carolina. Now that's approximately half a pound--and there were intermediate increases of 150, 165, and 238 grams in Florida, Texas, and North Carolina, respectively. One-half pound for a preterm baby at equivalent gestational age has very important implications for health status and health care costs. Increases in birthweight for full-term births also occurred--although they were relatively small--under 50 grams--in all five States.

In general, this pattern of WIC effects on birthweight is consistent with the explanation that relatively heavier babies have relatively lower-cost births. The smallest effects on birthweight and Medicaid costs were observed in Minnesota where we saw the smallest effect on cost, while the largest effects for both birthweight and costs were observed in North Carolina and South Carolina.

These results suggest that prenatal WIC participation by Medicaid recipients is also associated with a lower incidence of preterm births and a longer gestational age. (Table 8) The reduction in the percentage of women with preterm births ranged from 2.3 percentage points in Minnesota to 6.3 percentage points in South Carolina. Medicaid-eligible prenatal WIC participants also had longer gestations than nonparticipants, ranging from between .2 weeks for Minnesota to .8 weeks for North Carolina, with intermediate values of .4 weeks for Florida and Texas, and .6 weeks for South Carolina.

GENERALIZATION OF STUDY RESULTS

The results from the 5 study States indicate that prenatal WIC participation improves birth outcomes and generates savings in

Medicaid costs. Now the researchers asked Two important questions about the study results:

1. What can the results from these 5 States tell us about the nation as a whole?
2. How stable are these conclusions over time?

In answer to the first question, for the time period studied--1987-88--we believe the results would have been positive throughout the nation because the results for the 5 states were so consistently positive and because of the wide variation among the States represented in the study. That variation if you recall was in terms of the Medicaid eligibility standards, Medicaid reimbursement policies, health care delivery systems, and population characteristics.

The answer to the second question: how stable are the results over time? is somewhat less clear--there have been large changes in both the WIC and in the Medicaid programs since the data were collected. Participation in WIC has grown--because of budget increases and because of infant formula rebates. And the Medicaid Program has changed even more dramatically. All States now use higher income eligibility limits to establish eligibility for Medicaid.

Nationally, we now have adjunct income eligibility for WIC for all Medicaid participants. P.L. 101-147 extended automatic income eligibility for WIC to recipients of food stamps, AFDC, and Medicaid, and to members of families that include either an AFDC recipient or a pregnant woman or infant receiving Medicaid.

Clearly with these expansions, the Medicaid eligible population has changed. The question is: Would WIC have the same effect on this new population of Medicaid beneficiaries that it had on the very poor women and infants who were the focus of this study. And we don't have the answer to that question.

In Summary - There are several cautions about these results to keep in mind:

- o The study was conducted in only 5 States
- o There have been changes to WIC, MA, and health care delivery systems that affect the generalizability of these results to the present, and
- o The study used data for a very low income population, with average incomes substantially below the poverty line.

The study shows that:

- o an investment in WIC for pregnant women can save money
- o the provision of adequate and intermediate levels of prenatal care will save money in addition to WIC
- o WIC alone can reduce the incidence of LBW, the incidence of pre-term births, can increase weight gain especially for preterm births, thus helping the health care system avoid especially costly care.

The Department will continue to look at the issue as WIC expands and grows.

Now I'd like to tell you a little more about some other research that the Department has done since this study was originally released in October 1990.

I made the point earlier that the primary objective of this study was to look at costs during the first 60 days after delivery. This was what Congress asked for when they originally mandated the study.

What this means in practice is that in the original study, we prorated the Medicaid costs of infants whose service claims extended beyond the first 60 days postpartum.

What happens to the benefit/cost ratios if instead of prorating Medicaid costs, we take the full amount of claims originating in the first 60 days? Department researchers recently asked that question, and the results were published in a recent Addendum to the Report to Congress. (Table 9)

- o This new definition results in estimated benefit/cost ratios of 1.92 to 4.21, compared with 1.77 to 3.13 using the prorated cost variable.

These new benefit-cost ratios are not intended to replace the original ones. Indeed, our Addendum presents both sets of numbers side by side.

The new benefit-cost ratios are larger than the original ones because they encompass a longer timespan and take into account the full costs and duration (up to a maximum of one year) of health problems beginning in the first 60 days postpartum. In the original study, Medicaid claims for services extending beyond 60 days postpartum were prorated to reflect only costs incurred during the first 60 days, as specified in PL 100-237 and PL 100-202.

Both sets of benefit-cost ratios provide strong evidence of WIC's effectiveness, but answer slightly different research questions.

Now that we have this wonderful database, the Department continues to conduct new and exciting research on the effectiveness of prenatal WIC participation. A new report is forthcoming concerning WIC's effect on the very low birthweight rate (that is, infants weighing less than 1,500 grams at birth). We will be examining whether mothers who participated in WIC prenatally had a lower incidence of very low birthweight than mothers who did not. The report will be out shortly. Also in progress is an analysis that looks at WIC's impact on infant mortality. A report on that is expected out in early 1992. And as soon as those two reports are finished, we'll begin looking at WIC's impact on Medicaid costs throughout the first year of life.

The Department is committed to continuing research on the effectiveness of the WIC Program, and are pleased that the research confirms what we've believed all along: that WIC works.

Thank you for giving me this opportunity to talk with you about these exciting projects.



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FUTURE TRENDS IN THE FOOD STAMP PROGRAM

Andrew P. Hornsby Jr.
Acting Deputy Administrator
Food Stamp Program

- o Over the past two years, the number of people receiving food stamps has increased dramatically.
 - The increase began in the third quarter of FY 1989.
 - Between the second quarter of FY 1989 and the second quarter of FY 1990, participation increased by over 1 million people.
 - In March 1990, participation reached 20 million for the first time since 1985.
 - Since then, participation has continued to increase at an even faster rate.
 - Between the second quarter of FY 1990 and the second quarter of FY 1991, participation increased by over 2 million people.
 - In August 1991, participation exceeded 23 million, the highest ever.
- o Although the increase in participation was widespread--every State--four States (Texas, California, Florida, and New York) accounted for over half the increase between the second quarter of FY 1989 and the second quarter of FY 1990 and nearly a third of the increase between the second quarter of FY 1990 and the second quarter of FY 1991.
- o The recent growth in food stamp participation is not unprecedented.
 - Between the first quarter of FY 1979 and the first quarter of FY 1980, participation increased by about 4 million people.
- o The recent participation growth is remarkable in that it began at a time when neither increased unemployment nor major program changes could account for the increase.

- o The increase in participation since the third quarter of FY 1990 is associated with a rise in unemployment and a downturn in the economy.

ELECTRONIC BENEFITS TRANSFER (EBT)

- o EBT is an alternate means of issuing food stamp benefits which is being tested and evaluated as part of a general effort to improve the efficiency and integrity of the Food Stamp Program.
- o In 1981, FNS first contracted for a feasibility study for replacing food coupons with electronic benefits.
- o In 1983, FNS awarded a contract to Planning Research Corporation (PRC) to test EBT in Reading, Pennsylvania with approximately 3,500 food stamp cases and 120 retailers.
- o The demonstration ran for 15 months and continues to be operated today by the State agency.
- o The EBT system was preferred by all the major parties: recipients, retailers, banks, public assistance administrators, and the general public.
- o The one down side of the EBT system was the fact that the cost to the government for the system far exceeded the cost of the coupon system. Recent estimates for Reading, Pennsylvania show its EBT costs running about three times greater than coupon costs.
- o Evaluation data suggest that an EBT system which piggybacked existing commercial systems and/or was combined with other benefit programs (e.g., AFDC) would be substantially more cost effective.
- o There are currently three solicited on-line EBT systems implemented or scheduled for implementation in the near future:

Pennsylvania (Reading)	-State operated
New Mexico (Albuquerque)	-implemented September 1990
Ramsey County, Minnesota	-implemented September 1991

- o FNS issued guidelines in summer 1988 to allow additional sites to test EBT. There is currently one unsolicited on-line EBT system implemented in Maryland with plans to expand Statewide. Iowa is in the process of developing a system and New Jersey has just issued a Request for Proposal. South Carolina and Oklahoma have submitted draft RFPs. New Hampshire and Texas have submitted Planning APDs. New Hampshire is looking at a tri-state EBT project which includes Vermont and Maine.
- o FNS released a Request for Proposal in June 1989 for an off-line EBT demonstration project. In the off-line system, benefit information will be stored in the account cards themselves (commonly referred to as smart cards because a computer chip is embedded in the plastic card), rather than in a central database as with the on-line systems.
- o FNS awarded the contract for an off-line EBT system to the National Processing Company (NPC) of Louisville, Kentucky in September, 1990. The demonstration project site will be in Dayton, Ohio. Implementation is scheduled for February 1992.
- o An evaluation of the off-line project will assess the technical feasibility, the costs effectiveness and the impacts on recipients, retailers, financial institutions and government agencies.
- o The WIC program is conducting an off-line demonstration in Casper, Wyoming involving 600 participants and 4 retailers. The State is talking about a rollout of half its WIC participants, around 4500 participants, in 1992.
- o P.L. 101-624, the 1990 Farm Bill, established EBT as an issuance alternative and required final regulations to be issued by April 1, 1992.

The primary impetus for EBT from FNS' viewpoint is threefold.

- o EBT promises to improve the integrity of benefit issuance and redemption by limiting diversion of benefits from their intended use and by providing greater security for recipients against benefit loss.

- o EBT will replace and simplify current issuance systems, including the Authorization-to-Participate (ATP) system whereby recipients receive ATP cards which they then must use at issuance offices to obtain their monthly allotments of coupons. Banks and other institutions which act as issuance offices are sometimes reluctant to perform this function.
- o Over the long run, FNS is optimistic that with advances in technology and further participation, EBT will become a more economical benefit delivery system than the current paper-based system.

The EBT system is made up of several components which act together to provide recipients with the intended benefits.

- o The recipient has a magnetic-stripe plastic card and a computerized account at the EBT Center where benefits are electronically deposited in each household account.
- o Participating stores are equipped with EBT terminals at the checkout counters. Here the recipient presents the EBT card to the cashier, who then passes it through the terminal's card reader.
- o The recipient then keys in a secret identification number, or PIN, and the cashier enters the amount of the purchase.
- o The terminal makes a dial-up connection with the EBT Center computer, which verifies the recipient's account, and sends an authorization back to the terminal. The amount of purchase has then been debited from the recipient's account and credited to the retailer's account.

Besides FNS, the other users of the EBT systems have found advantages as well.

- o Retailers expressed strong preferences for the EBT system over coupons primarily because it reduces the post-sale handling required for coupons.
- o Recipient found EBT easier to use than the coupon system and that it reduced the overall time and effort required for program participation.

- o Banks were pleased that EBT eliminated their coupon issuance role and considerably reduced their costs for handling and redeeming benefits.

Some concerns still exist with regard to the cost of EBT. FNS hopes that as other public and commercial uses of point-of-sale technology progress, the cost to the Food Stamp Program will be reduced. Whether or not government should be pioneering this technology is another issue. FNS does not want to bear the general cost of technology development, but does want to apply available technology as it serves our program needs.

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MAKING RURAL POLICY FOR THE 1990'S AND BEYOND: A FEDERAL GOVERNMENT VIEW

Walter E. Hill
Deputy Under Secretary,
Small Community and Rural Development
U.S. Department of Agriculture

It is well-recognized that rural America has been going through some difficult times. While the national economy performed well over the last decade, rural employment and income growth lagged. Many rural citizens have moved away to the cities, leaving behind the aging and more poorly educated.

These conditions have been agonizing for those of us who are charged with providing leadership to the Federal government's rural development efforts. I want to make very clear at the outset that rural America's problems cannot be attributed to errors of omission or commission in government policy. They have resulted from basic and well-documented trends in the international marketplace that now put less value on what rural America has traditionally produced.

However, some mistakes have been made and the purpose of my remarks today is to address procedures that will help us avoid similar mistakes in the future. I will not focus on what might be an appropriate set of programmatic responses to rural problems. Instead, I wish to address the more fundamental difficulties associated with creating conditions in which an effective response is possible.

The restructuring of the world economy has triggered an economic transition within rural America. Rural areas are now in the midst of converting from an agrarian way of life to something different. The eventual outcome of this transition is not yet clear. I believe our challenge as a Nation is not to pretend we have the foresight to anticipate future events and solve problems before they occur. Instead, it is to establish a capacity to be

insightful, creative, and adaptable in the face of inevitable change.

Given worldwide economic change, what role should government policy take? Certainly, it is not to stand in the way of economic transition by attempting to preserve former conditions. Success in a market-oriented economy requires capitalizing on new opportunities uncovered by change. Government's role must be to facilitate the transition by helping rural Americans capitalize on these new opportunities and by easing the hardships brought by change. In the end, however, public policy will have a smaller impact on the outcome than the efforts of rural Americans themselves. It is they who must bear the responsibility for creating their own futures.

A Vision for a Better Rural America

What sort of future would we like to see for rural America? This is perhaps the most critical question we can ask, since meaningful rural policy is impossible without a vision of where we are hoping to go. Management experts refer to the process of imagining the future as visioning. If we are to escape the trap of believing that our future must be a carbon copy of the past, we must engage in a process of envisaging a healthy future for rural America.

I would like to share with you today my vision for rural America. It has five elements. I will discuss each briefly.

A competitive rural economy. In a market economy, economic rewards accrue to producers who develop competitive advantages over other producers. Those advantages provide the basis for developing a higher volume and value of sales and rising returns in the form of wages and profits. Rural America can survive in two ways: through its own efforts or by being underwritten by the remainder of the American public. As a Nation we have turned away from subsidies as an acceptable way of equalizing living standards within America. As a result, if rural America is to prosper, it must do so by maintaining its economic viability.

Growing pressures resulting from increasingly strong global competition, as well as the rising industrial capacity of many developing countries, are challenging the rural economy's ability to respond. This is occurring at the same time as traditional rural industries--farming, mining, and timber production--are becoming more labor efficient, and thus need smaller numbers of rural workers. Rural America can hope to prosper, but only if it develops an enhanced ability to compete.

I believe rural America can succeed. Its enormous assets--its natural resources, its infrastructure, its people--have great potential for adaptability and improved productivity. However, rural America will have to respond by using its resources in new ways to

produce what the world wants to buy. This will require rural America to establish new products and services, to enhance its comparative advantages and perhaps to create new ones, to start new businesses and even to create new industries. I believe rural America can succeed, but to do so it will first have to recognize and accept this challenge.

Potential for good livings. Fundamentally, people cannot and will not live in a place that does not afford them an adequate livelihood if a better alternative exists elsewhere. If our citizens who choose to do so are to be able to live in rural communities, it is essential that the rural economy be able to sustain a high and rising standard of living for all its residents.

At present, the rural economy is far from attaining this goal. Unemployment rates are too high in many areas. Even where jobs exist, they are often in occupations that pay little more than the minimum wage and have no career potential.

I believe we can do better. I believe the rural economy is capable of adding jobs and of creating new, high-wage jobs to replace those now under pressure in the world market. We must make it a primary goal to enhance the rural economy to the point that it can sustain a high standard of living.

Sound communities. Community life is important in two ways. The ability of a community to act in unison can be an important ingredient in a community's success as an economic unit. Communities that demonstrate the leadership capacity to innovate and create their own visions for the future, and the follow-through to achieve agreed-upon goals, have shown greater success than communities that lack these qualities.

In addition, a solid community life can be an important value in its own right, making life more pleasant and supportable than it otherwise would be. The possibility of knowing one's neighbors and sharing in their successes and setbacks is one of the rewards of rural life.

However, our rural communities are by no means all models of harmony. Many are divided by social distinctions that limit their potential. Many are too small and too isolated to be capable of providing adequately for themselves. Despite the need for communities to join together to magnify the value of their resources, many remain too insular to reap the benefits of multi-community collaboration.

I believe that building healthy communities is a priority for rural America. Rural communities must become strong internally and willing to work cooperatively if they hope to brighten their futures.

Good services and housing. Rural Americans deserve an opportunity to enjoy a basic array of public services to make rural life safe, productive, and convenient. However, in

some areas, existing services fall below the level we believe to be appropriate or that are necessary to sustain high quality rural lifestyles.

The ultimate responsibility for providing local services rests with rural communities themselves. However, the fact of being rural poses difficult challenges for service delivery that create special problems for rural areas. Many services are more costly to provide in rural communities because of their small size and dispersed populations. As a result, we cannot expect all services to be available at the same level or in the same quality as in more densely settled urban areas.

Rural America can find solutions for the problem of providing affordable services, but it will require new ways of thinking and acting. Rural communities must look for new, lower-cost ways of providing services, such as applying specially-scaled technologies and sharing costs over a regional area. Government at higher levels must help by recognizing rural America's special needs and by investing in technologies for community services that are appropriate to a rural scale.

Well-being sustainable without subsidies. Above all, rural America's future must be sustainable by its own efforts. America's struggle to advance the national standard of living will not allow massive diversions of resources from stronger segments to bail out weaker ones. While our national policy must always have a place for humanitarian assistance to persons who, by reason of incapacity, cannot provide for themselves, we cannot afford to underwrite broad segments of society whose own efforts provide low returns.

This statement has several implications. Responsibility for rural America's future rests first and foremost with rural Americans. Governments' roles are to help ease the economic and social disruptions that accompany change and to invest in strategies to enhance rural America's ability to develop in self-sustainable ways.

Obstacles to Achieving the Vision

Crafting public policies to achieve these results will not be easy. We do not fully understand the economic challenges that confront rural America today, and certainly we do not know how they will be different tomorrow. Meeting them calls for clear-headed understanding and, I suspect, more than a little good fortune.

Even before we can tackle the job of responding, we must create the ability to act. Possibly our greatest challenge is the very major obstacles that are imposed by the context in which rural policy must be created. I would like to focus here on two sets of challenges: those resulting from the complexity of rural areas and rural issues, and those produced by the complexity of our governmental system.

The Complex Rural Universe

Rural problems, and government's challenge in responding to them, are shaped by the special characteristics of rural America itself. Some of these are imposed by the manner in which rural communities are organized. The very term "rural" implies location at a distance from any urban center, which makes access to public services more costly and difficult to provide and economic activity harder to maintain. Rural communities typically are small in size and low in density, which adds to their economic problems.

Even more important, however, are challenges faced by, and sometimes produced by, rural people themselves. Rural leaders frequently lack understanding about the global conditions that will shape their futures. As a result, they often resist the idea that change will be needed to adapt to worldwide economic trends. At the same time, many avoid responsibility for their own problems, choosing to blame others and looking to Washington or the State capital for answers. Their small size limits the technical expertise available to conceive and carry out economic strategies.

Overlaying these frequently shared characteristics is the enormously diverse range of conditions that exist in individual rural areas. Rural America contains areas that specialize in farming, ranching, timber production, mining, manufacturing, and recreation, among others, but seldom more than one of these in any one place.

The Complex Intergovernmental Community

A national response to rural America's need for a new approach to rural development will be managed by a governmental system that is incredibly complicated. That system can be dissected in two directions. Sliced horizontally, we see a myriad of issues affecting rural America's competitive position that range from health, education and job training to infrastructure development and business assistance. With rare exceptions, these programs are managed by separate departments which operate them independently of each other. The fragmentation of government's overall response to rural America is similar at both the State and Federal levels.

Sliced vertically, responsibility for rural development is shared by several levels of government. The Federal government offers a wide range of programs that address many issues affecting rural America's developmental potential. While these are usually offered to States or local governments to implement, differences in desired outcomes frequently inhibit full coordination across levels. States play a far greater role in rural development than the Federal government does, but they too face challenges in coordinating their actions with local priorities. At the local level, development duties are shared among numerous governments, including counties, cities, special districts, and

non-governmental entities such as planning and development districts. Ultimately, economic development is a matter for the private sector. Ideally, government activities will be well-coordinated with private initiatives, but close public-private cooperation is the exception, not the rule.

Historically, there has been no institutional basis for bridging the structural gaps that divide our response to rural America's needs. Understandably, achieving a strategically-focused, effectively administered course of action has been exceedingly difficult in this complex environment. Accordingly, a major challenge--and priority for action--must be to develop an environment in which essential partnerships can be cultivated and a unified response is possible.

The Federal Role in Achieving the Vision

As a Federal Government, we are not well-positioned for an effective response to this vision. Rather than acting with a consistent policy that can lead us to the results we desire, we have divided our efforts and diluted our effectiveness. If we follow the record of our past performance, there is little reason for hope that a different future awaits us. But are there things we can do now to achieve a different outcome? I believe the Federal government can act in five areas.

Understanding the Past to Envision the Future

Creating a future that avoids the pitfalls of the past first requires that we understand our history. Both the complexity of rural America and its diverse economic and social experiences make simple explanations meaningless. At the same time, rural America's future will arise from the roots of the past. A clear understanding of those roots--social, economic, geographic, political, demographic--is essential to assessing each area's circumstances, their causes, the opportunities they may present, and the pathways for capitalizing on them.

One of the Federal government's roles is to provide a base of knowledge that can inform national understanding about rural America's circumstances and its opportunities. Nationally, we have underinvested in the kinds of knowledge needed to provide leadership to rural America. Our understanding about rural problems and their causes is too rudimentary to support wise policy choices. Furthermore, we lack more than an intuitive appreciation for the strengths and weaknesses of strategy alternatives. I believe that our research capability to investigate both the causes of rural problems and the effectiveness of strategies to address them must be strengthened.

At the same time, we lack the institutional capacity to apply policy knowledge effectively. Information that could save us from costly mistakes goes unused. And we slavishly adhere to development strategies whose value, though questionable, goes unquestioned. We cannot afford to lose the value of knowledge in making rural policy. Accordingly, I attach a high priority to establishing within the Federal government a capability to translate that knowledge into action agendas.

Raising the Nation's Sights

The complexity of rural America's circumstances, and the seeming inscrutability of the forces impacting them, can easily lead to a climate of hopelessness within the rural population. As a result, for many rural Americans change suggests not an opportunity for advancement but what appears to be a tragic loss of what is valued from the past. These feelings have the capacity to immobilize people at the very time when their adaptability and creativity are most needed.

I believe government has an opportunity to help rural Americans pass through transitionary times. Perhaps the most important role is to promote understanding about what is taking place in rural America and what it can mean for the future. Most needed is a positive vision for the future, one that emphasizes what--through intelligent and cooperative action--can be achieved. At the same time, there is an opportunity to make clear the costs of failing to respond.

Public leaders also have an important role in helping to resolve major national issues--such as the controversy surrounding the economic development and environmental quality debate--that affect the future of rural America and that, if left unresolved, threaten to constrain it in undesirable ways.

Promoting Strategies for Development

It is clear that if we mean to use our limited rural development resources to maximum effect, we must apply them to the implementation of carefully-crafted strategies. I believe the Federal government is well-positioned to provide national leadership in creating broad approaches that respond to fundamental national needs for rural development.

I do not mean by this that the Federal government ought to create community-specific strategies; the responsibility for development in any rural community rests, rightly, with the citizens of that community. However, the Federal government can provide leadership to assure that its own programs support a decision-making climate that sustains effective development strategies at the community level. It can do so by

defining and evaluating strategies that respond to each community's individual interests, focus on the well-being of existing rural residents, and have the greatest chances of succeeding.

At the same time, Federal officials can provide leadership by identifying policies that, if left unmodified, could reverse hard-won advances in rural communities. This, in my opinion, is a major responsibility for the Federal government. It is clear that many national policies create unintended but nonetheless harmful consequences for the relatively fragile economies of rural communities. As a result, the Federal government has a special duty to monitor these impacts and to ameliorate their effects where this is possible.

Encouraging Innovation

Rural America appears most likely to prosper in the coming times if it responds to its challenges with creativity and initiative. As my colleagues are fond of pointing out, every challenge brings with it an opportunity. The key is to focus on those opportunities and the means by which they can be exploited.

The keys are to recognize opportunities when they occur and to be capable of acting on them. Clearly, the Federal government cannot, and should not, substitute its own innovation for that of rural Americans. What rural America does must fit its own desires and abilities.

However, the Federal government can assist the process of innovation in several ways. First, it can help establish a climate in which innovation and experimentation are not merely tolerated but celebrated in both the public and the private sectors. Second, it can help rural businesses and people understand the opportunities inherent in change. And it can share skills that may help rural America to follow up on those opportunities.

Removing Barriers

While it means to help, often the Federal government has imposed new barriers to innovation and productivity. These have hurt rural America's chances for competitiveness, sometimes a great deal. As a Nation, we cannot afford to use our resources so carelessly. Nor can we afford to stifle local initiative with the very tools by which we mean to help.

What is needed is no less than a new *modus operandi* for government, a new paradigm, if you will. It must begin with an understanding that if rural America must bear the responsibility for its own future well-being, as it does, then government's role must be to

nurture and sustain rural communities in their tasks, not to direct them. We must create a new "ethic of collaboration" in government that fosters cooperation among all levels and with the private sector. It must reject the idea that government policy for rural development ought to be regulatory. It must embody the notion that government's role should be supportive and helping, and that government should act to remove obstacles to the achievement of each community's highest potential.

Where We Go From Here

In the past year, through the President's Rural Development Initiative, we have taken several important steps, which I believe represent major progress in building an effective Federal response to rural America's problems.

First, the President's Council on Rural America has been making a deep exploration of the Federal Government's rural programs and policies and the means by which we apply them. The Council has heard from hundreds of citizens representing both the private and public sector about their concerns and their aspirations. It is too early to speak about conclusions the Council may draw; its report will be presented to the President in July 1992. However, I would like to point to the Council's penetrating assessment of our current system as a model of the kind of hard look we must all take in our search for excellence in government. Each of us must subject our own agencies, programs, and ways of doing business to careful scrutiny. The Council's start in this direction can provide inspiration to us all.

Second, since I spoke here last year, we have formed State Rural Development Councils in eight pilot States. During that time, these councils have evolved from a fond hope into organizations that are beginning to function in ways we had only imagined. They have learned the value of close cooperation. And they are beginning to examine the roots of their rural needs and to craft strategies to address them.

The councils, too, represent the spirit of experimentation and innovation in government that is essential to dealing successfully with rural America's problems. We did not know when we began this pilot project whether the concept could work. Certainly there were many formidable obstacles to its success. However, even though the councils have much growing to do before they will have reached their potential, it is clear that the meager costs of this initiative are far outweighed by the benefits. On that basis, President Bush recently wrote the remaining governors to invite them to enter a similar partnership with the Federal government, local governments, and the private sector.

Third, we have made significant progress in developing cooperation among the various Federal departments and agencies that share responsibility for helping rural America. The Economic Policy Council's Working Group on Rural Development, which has been

meeting since March, 1989, was made a standing committee by the President's January 1990, policy statement. Since then, we have worked diligently to create a real, functioning institution that could bridge the organizational differences and institutional jealousies that fragment the government into so many little pieces. Building the institutional capacity of the Federal government to work as one team is, I feel, a prerequisite to effective, strategic action. It is, unfortunately, a task that takes a great deal of time and provides few immediate rewards. However, now I believe we are poised to combine the Federal government's immense resources to promote innovative strategies and remove obstacles to effective local action.

As you can see, I have no silver bullet to offer that will assure rural America a bright future. None exists. What I offer instead, and what we have found works well, is power of imagination, of willingness to do things in new ways, of examining both our premises and our programs, of working in unison. It is a slow way. It is an unglamorous way. But it is the only way.



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BUILDING NATIONAL STRATEGIES FOR RURAL ECONOMIC DEVELOPMENT

J. Norman Reid
Deputy Director,
Agriculture and Rural Economy Division,
Economic Research Service, USDA

It is a well-established fact that new approaches are required to enhance rural America's future. My objective in this paper is to move beyond the need for a strategic approach and begin exploring particular kinds of development strategies that can help solve rural America's development problems. I will also address some critical investments we must make if we hope to create strategies with a reasonable chance of succeeding. Before turning to those issues, however, it is helpful to revisit the fundamental question: why do we need to take a strategic approach at all?

Can a Strategic Approach Help Rural America?

To help answer this question, it is useful to begin by recalling some of the experiences the rural economy has undergone in recent years. This will direct our thinking to some of the more critical underlying questions that affect the ability of rural America not merely to survive, but to thrive.

Changes in Rural Competitiveness

It is not necessary to repeat again the statistics that portray rural America's economic difficulties in the last decade. The Economic Research Service has done a careful job of informing the national dialogue on this score. The summation of these analyses is that rural America finds itself in the midst of an economic conversion that is painfully

incomplete. At least two major forces underlie that conversion.

The falling contribution of natural resources. First, for several decades, economic activity has been shifting away from natural resource industries--traditionally the mainstay of the rural economy--towards heavier reliance on other sectors--manufacturing and services. During the post-World War II period, the share of GNP produced by natural resource industries has steadily fallen, declining from 11.7 percent in 1947 to just 4 percent in 1987 (See Figure 1).

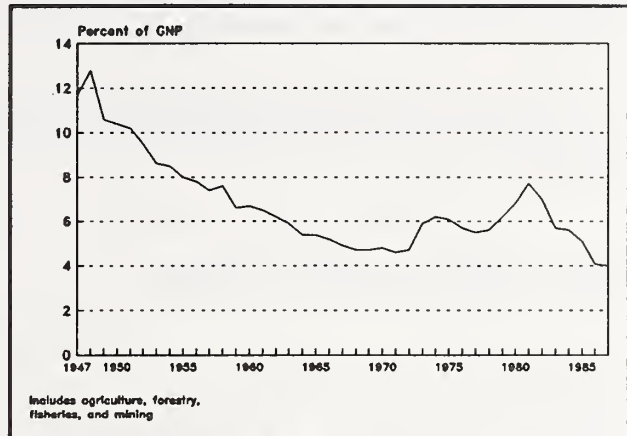


Figure 1—Natural resource industries' contribution to GNP, 1947-87

Although resource industries in some parts of the country face serious problems, the basic cause of this trend is a fundamental transformation of our economy. To a large extent, these changes result from major gains in productivity and from the growing importance of services in our economy. Rather than reflecting weakness, this trend shows the high level of development we have achieved as a Nation. At the same time, however, it points to basic shifts in the economic role rural areas can expect to play in the future.

A major implication for rural America is that natural resource industries, by themselves, represent a diminishing opportunity for economic sustenance. Either rural America must find new ways to supplement its natural resource-based industries, or it will shrink.

Globalization of markets. A second basic trend is the change in economic competition in world markets. Following several decades of recovery, the war-ravaged economies of the leading industrial nations have emerged as major competitors to the United States. In addition, the amazing growth in the industrial capacity of Third World nations, along the Pacific Rim and elsewhere, has seriously pressured rural manufacturing. During the 1960's and 1970's, manufacturing firms rushed to rural locations, especially in the South, to take advantage of the low cost and stable environments they afforded for industrial activity. This industrial growth was able to absorb much surplus rural labor released from farming by mechanization and was a major factor in heading off high levels of rural unemployment during that period. But in the late 1970's and continuing throughout the 1980's, rural manufacturers found themselves facing a build-up in competition from foreign firms whose low costs of production enabled them to underbid American producers.

It is evident that rural America is unlikely to win a wage battle with the Third World manufacturers. When low-wage manufacturing shifts overseas, it is likely to be gone for good. Even more important, it is not in rural America's best interests to try to win such a battle, which can be won only at immense costs in terms of the rural standard of living.

In the end, it seems clear that rural America can achieve a brighter economic future only by discovering new forms of activity with the potential to return higher earnings to its workers.

The Complexity of Rural Problems

Finding workable solutions to rural America's development problems is complicated by the intricacy of the problems it faces. Most development specialists are now painfully aware of the diversity of conditions across rural America. Few would now advocate a single approach to rural development. It is clear that the human resource development needs of the South, the economic diversification needs of the farm belt, and the growth management needs of amenity-rich coastal and mountainous areas each require special responses.

Equally true, though less well-understood, is the wide range of factors that affect rural America's chances for development. Among others, these include the attitudes of local people; their knowledge, skills, and fitness for work; their understanding of local trends and the economic opportunities they present; the local institutional base; the presence of physical infrastructure; and the availability of capital.

I have intentionally put infrastructure and capital last. These are certainly important and should remain a key part of government policy for rural development. But the other factors, all too often neglected, may be even more important. To achieve economic development, a minimum threshold must be reached on each factor. It is not sufficient to invest in only one or two. For this reason, single programs that operate in isolation from others have a lower chance of success than would a balanced package of actions to address the full scope of developmental needs.

The Challenge of Isolation and Low Density

One of the principal disappointments of the 1980's was the conclusion--ultimately forced on us by the reversal of the rural economic boom of the 1970's--that isolation and low density remain potent brakes on rural growth. A recent ERS study concluded that

the remoteness and sparsity of rural settlements may make them largely unsuitable for complex manufacturing

operations, industrial research, or other activities requiring relatively high-skill employees.

. . . [R]ural areas lost out in the 1980's more because they were rural than because rural workers had low education levels.¹

Despite major advances in transportation and telecommunications during the last 40 years, in relative terms rural areas remain cut off from the mainstream of American economic life. At the same time, world competition has heated up, and winning economic strategies now require faster responses to changing market conditions and more highly specialized, innovative products and services. In this new environment, rural America has fallen behind. This is one of the major lessons of the 1980s, though I think we have not yet learned its full importance for the future.

Our Resources are Limited

Another consequence of tightened world economic competition is the squeeze it has put on our available resources. In our drive to find every last bit of efficiency that can give us a national edge in world markets, we have found it increasingly tough to afford fixes for all problems. Though our national debt problem is painful, at least it has succeeded in turning our attention away from the traditional scattergun approach to rural development. Nowadays, if we wish to do anything constructive in the area of rural development, we must pick our shots wisely, and be careful not to miss.

Can a Strategic Approach Help?

In light of these facts, it seems clear that we must either act in a strategic manner or we will be wasting our time. The more important question is whether *any* approach, strategic or otherwise, will make enough difference to justify our efforts. I admit freely that I do not know the answer to this question. Often, the rural problems confronting the Nation seem to me insurmountable.

However, I believe that there is reason for optimism. America has not yet made what could be considered a frontal assault on rural problems. There are at least theoretical reasons for thinking that if we made such an assault, we would stand a good chance of success. We have made major advances in inventing technologies that can reduce the barriers of distance and isolation. However, I do not believe we have fully exploited their potential to make economic activity more feasible in dispersed rural settings. As a Nation, we understand very well what is occurring in world markets and how to exploit

¹David A. McGranahan, "Introduction," in *Education and Rural Economic Development*. ERS Staff Report AGES 9153. (Washington: U.S. Department of Agriculture, Economic Research Service, 1991), p. 3.

the new opportunities that are created daily. But, we have not applied our information and technology in a way that permits rural Americans to take full advantage of these new opportunities.

For this reason, I believe a purposeful approach that targets rural America's economic constraints has the potential to enhance the chances of improving rural economic performance.

Defining a Strategic Approach

Let me briefly restate some of the assumptions that underlie the approach. Strategy is not merely a fancy word. It is a way of doing business that differs from the ordinary. A strategy is a plan that links together the available resources--organizational, human, financial, and other--in reasoned sequences and combinations to achieve a desired objective. A real strategy therefore requires at least these elements: a clearly understood objective, a reasoned plan for achieving it, the ability to mobilize and manage resources in accord with the plan, and an understanding of how actions taken in support of the plan can be expected to interact with the context in which action is taken. A strategy that lacks these elements is more likely to be wishful than effective.

Elements of a National Strategy

What kinds of strategies might we use to address rural problems? I will suggest two that appear to have promise.

Building new economic strengths. An obvious strategy to counter rural America's loss of comparative advantage in low-wage manufacturing and natural resource extraction is to develop new competencies. The objective of this strategy is to build comparative economic advantage in a new industry, or in a new product or service line within an existing industry.

Distance from markets remains a major obstacle to rural development. Rural producers are cut off from information about input and product markets and their goods and services are more costly or difficult to transport. By producing goods that have an edge over the competition--goods with especially high quality, uniqueness, or that meet a specialized need--rural America can create a market for its goods that is little affected by transportation costs.

One means of achieving this is by applying the Nation's investment in technology to create new goods and services whose technologically-based edge cannot readily be duplicated by the competition. Technology can lead to this result in two ways. It can

lead to the development of new products that, because they apply new technologies, have a creative edge. And it can be applied to develop advanced methods of producing low tech products and services, thereby improving efficiency and cutting costs.

We have made a large investment in public technologies through hundreds of government laboratories. These laboratories have compiled an impressive record of scientific advances in their assigned disciplines. And through technology transfer programs, much progress has been achieved in putting research knowledge to work in practical applications in business and government. More recently, we have provided incentives for government scientists to use their knowledge in private commercial applications.

Even though high technology has great potential to help strengthen the rural economy, I do not want to equate this strategy with technology transfer. Doing so carries risks. One is that it might lead us to focus exclusively on technologies without also considering what is required to use them to develop competitive products and get them into production. Another is that we would focus on using existing technologies, without thinking beyond the limits they impose to include a wider range of economic possibilities.

This strategy has the potential to position the rural economy as a producer of goods and services that the world wants to buy, and is willing to pay well to get. However, to be effective, it is essential that we focus squarely on the outcome we desire--a competitive rural economy--and not on slavish use of certain inputs, such as particular technologies or industrial products--for which we would like to find uses.

Developing effective marketing. Producing more competitive goods and services only works well if rural areas also are able to sell what they produce. Rural areas will become better off only when they develop the ability to sell to high value markets. The second strategy, then, is to help rural America position itself to sell to these markets.

The essential ingredients to building an effective rural marketing response include understanding marketing strategies and opportunities, and having the ability to create and implement those strategies. I would like to emphasize that marketing is much broader than salesmanship. It is not enough to push a good product hard. Creative marketing involves analyzing emerging trends in the marketplace, and then designing products, production methods, and sales strategies to capitalize on profitable opportunities while they exist.

The first step in creating a rural capacity to respond to its economic opportunities is to persuade rural producers of the benefits of alternative approaches to marketing. Many producers continue to perceive their economic options in terms of lowering production costs for mass-produced, standardized commodities and other goods. Though often effective, this strategy ignores new--and often more lucrative--openings to sell specialized

products and services in narrow markets. We are beginning to learn how to exploit these opportunities by targeting specialty products and value-added industries, but much more is possible throughout the full range of rural industries.

Market information remains an important barrier. Rural market information is predominantly centered on agricultural and natural resource commodities. In other industries, rural producers must rely on the same sources as urban producers, often to their detriment, given their generally poorer access to information and their lower ability to process it effectively. This shortfall leaves an opening for rural policy to target the improvement of market information and marketing assistance to producers in manufacturing, services, and other underserved rural industries.

A second barrier is rural America's institutional limitations in responding to the new opportunities. Aside from the relative lack of information, rural producers also face obstacles that are less pressing in urban areas. The difficulty in finding supporting services in the business community stems from the thinness of the rural economic base. The agglomeration of businesses in larger cities makes innovative economic activity more supportable, and less costly, there. In addition, a larger percentage of rural businesses are absentee-owned, meaning that control of rural economic decisions is more often in the hands of persons whose interest in rural well-being may be less than their interest in the firm's overall profitability. A rural development policy that seeks ways to link businesses across regional space and that targets locally-owned firms would provide first steps toward greater rural capacity to manage effective marketing strategies.

Strategies That are not Strategies

What I have not said is as important as what I have. Not everything that passes for a strategy is one.

Education. I have not said that education should be one of our chief strategies for rural development. This is not because I think educating our rural children and adults is unimportant. To the contrary, I believe a high level of skills is critical to our Nation's future well-being. Knowledge and skill are also deeply embedded in the strategies I have suggested. And that is my point. Though education is a critical element in building the kind of rural American future that is possible, it cannot do the job by itself. It is not a complete strategy; rather, it is a tool that must be integrated with others.

Infrastructure development. I have also not argued that strengthening the base of physical infrastructure should be a strategy for rural development, though this, too, is an important national priority. Like education, however, infrastructure development by itself is devoid of strategic importance. Unless specific projects are connected with broader plans to enhance rural America's ability to compete economically, they risk

being totally disconnected from helping rural America reach its potential. Like education, infrastructure development is a tool, not a strategy.

Business credit. Nor have I argued for an expansion of financial assistance to businesses. Financial capital is clearly a critical ingredient in the rural development stew. But it is just that: an ingredient. An expansion in business credit that is in a pot by itself will make a very thin broth indeed.

Requirements for Effective Strategies

I am not under any illusions that adopting and adhering to a strategic approach will be easy, if in fact it is possible at all. Thus, I would next like to discuss three elements that must be in place before a strategic approach can succeed.

The Political Will to Strategize

The first essential is willingness to adopt a strategy and stick with it over enough time for it to bear fruit. This would appear to be the easiest requirement to fulfill. In fact, it is probably the most difficult.

I say this because there is a notorious absence of willingness, in our political system, to make hard choices and stick with them. This is especially true in the area of economic development policy. Since the beginning of the Republic, local development has been synonymous with pork barrel politics. Development programs have usually consisted of projects of one sort or another that facilitated commerce and industry in local areas. I do not mean to deny the impetus some of these projects gave to local growth prospects. However, many of these projects worked better as political paybacks than as development strategies.

The American approach to development has always been one of spreading the goods around, rather than planning a path and following it to its end. This proclivity stems from a dislike of saying no to anyone or any place. Understandable though it is, this distributive approach to policy results in programs that are better characterized by "look good" than "do good."

What it all comes down to is this: whether or not we will be able to use our public resources to tackle the challenge of foreign competition head on will depend on the readiness of our system to adopt and follow a new political ethic. Resistance to adopting a strategic approach will be strong and over time there will be enormous pressures to deviate from it in one case after another. I do not know whether it is possible for a strategic approach to succeed in this country, but I am sure that without strong national

leadership to press in this direction, it cannot.

Understanding the Need

Wanting to apply a strategic approach and knowing how to do so are quite distinct. An effective strategy requires the constructive application of knowledge. Several kinds of knowledge are needed. First is the context in which rural development will occur and how that context is changing. Second is the nature and causes of rural conditions--the hows and whys. And finally are the effects of specific policies and programs and how they will interact with rural conditions.

Understanding the Context. Each journey must start at its beginning. We cannot know how to get to our destination without first knowing where we are. It is critical that the creation of a strategy for developing rural America begin with an assessment of the current situation: what is happening in the rural economy and the rural population, and why.

This is not a requirement to take lightly. Nor is it one that can be easily solved by taking a few reports off the shelf. As a Nation, we have underinvested in knowledge about our rural areas. Our national statistical programs provide much less information about rural America than about the rest of the country. And we have barely scratched the surface even in describing the "what is" of rural America.

We must do a better job of creating the knowledge base that is critical to intelligent action. We can begin by strengthening our research program.

Understanding the hows and whys. We must also take into account how our actions will affect rural people and institutions to bring about the results we intend. We cannot do so, however, without understanding first how the rural economy and society work.

What we know now is surprisingly superficial and in many cases is very spotty. We cannot, for example, state with certainty whether rural America has lost more manufacturing jobs to Third World countries than to American cities during the last decade. In part this results from the gross imbalance in how we have invested our research dollars. USDA devotes only about one percent as much staff to understanding the rural manufacturing and services sectors as it does to the agriculture sector, even though manufacturing and services employ 8 times as many rural workers and have far greater future job growth potential.

Understanding program effectiveness. It is equally important to know our tools--our policies and programs--and when and how to apply them. Clearly, no program is appropriate for all situations. Nor will any program work equally well in all

circumstances. Knowing when and how to address rural problems is critical to effective action.

Our knowledge about the effectiveness of alternative development programs can only be rated as poor. A recent review of rural policy assessment research concluded that while the number of studies appears to be increasing, what exists is shallow, lacking in sensitivity to differences in rural context, applies a too-narrow definition of success in development, and faces severe limitations in methods and data.² In short, it hardly represents a sound scientific base on which to rest a national strategy for improving the lives of a quarter of our population.

Being able to apply knowledge to policy. It should be apparent that research that remains on the shelf has no value for policy. Unfortunately, the inability of policymakers and policy analysts to communicate is legendary. Nowhere is this more true than in the area of rural development. In part, it results from the ordinary difficulties of bridging the communications gap between those trained as scholars and those inclined to action. It also results from the lack of practical assessments that can be readily converted into action plans. And it is affected by the widespread belief that rural development is everyone's specialty. It is equally important to effective strategies that we rectify these shortcomings in communication as it is to improve the quality of the basic knowledge on which they rest.

The Capacity to Cooperate

A final criterion of success is having the ability to work effectively with other organizations, both public and private, who can contribute to rural development. This is important because the world has changed. Although it seems to be very human to work separately, as though others were not trying to achieve the same goals, it is clear that we cannot succeed through individual efforts alone. The scarcity of our resources alone demands cooperative approaches to rural development. We cannot afford individualism in rural policy.

Working with others demands a different style of operating than that to which we are accustomed. We are used to working individually, rather than in partnership. As we try to establish a new manner of acting--cooperatively with other organizations--we will have to learn new skills.

Among them are the ability to communicate with other organizations with whom we may share little in common; to listen to expressions of goals and means that do not mesh with

²David W. Sears and J. Norman Reid, "Rural Strategies and Rural Development Research: An Assessment," *Policy Studies Journal*, forthcoming.

our own experience; to share the rewards, and the burdens, of joint action; to put achievement of goals above personal aggrandizement; to focus on the ends we seek to achieve in preference to the means that are familiar to us.

This challenge, too, will not be easily overcome. Like the others, unless we conquer it, we will have a difficult time in making our efforts worth the public's cost.

Do We Have What it Takes?

My biases are quite clear. I believe a strategic approach to rural economic development is needed if public policy is going to make a meaningful contribution to the future of rural America. I believe that effective strategies can be designed to promote enhanced rural competitiveness. I also believe we have sufficient resources to carry out credible strategies.

What is needed next is to create the institutional capacity to design, legitimize, and implement rural development strategies. As I have indicated above, this requires developing the political will to act strategically, building and using a knowledge base about rural conditions and policy alternatives, and reaching out to form effective new partnerships.

Will we succeed? Do we have what it takes to respond to rural America's needs with our best shot? Only time will tell.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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CAN THE RURAL ECONOMY BE COMPETITIVE? LESSONS FROM THE DATA

David McGranahan
Economic Research Service

The 1980's were unkind to rural workers, their families, and their communities. Job growth stagnated, unemployment rates remained high, earnings declined, and people moved out. More than 1240 rural (nonmetropolitan) counties, over one half of all rural counties, lost population between 1980 and 1990. Only areas in the immediate sphere of growing metropolises or having natural amenities--temperate climate, lakes and ponds, or mountains--attracted new residents and jobs during the 1980's.

Rural outmigration is of course not a new story. Outmigration had been characteristic of rural areas from the 1920's until the "rural renaissance" of the 1970's. It is tempting to dust off old analyses such as, "The People Left Behind," or, "The Communities Left Behind," update the tables, and reissue them.

But the 1980's were not a return to old times. The outmigration of earlier decades, much of it an exodus from marginal farms, was accompanied by rising rural incomes and a narrowing of the rural-urban income gap. In contrast, rural per capita incomes failed to rise in the 1980's, despite the continued increase in women's labor force participation and the decline in childbearing. For the first decade in this century, the rural-urban income gap widened instead of narrowed (fig. 1).

Part of the explanation for the rural economic disadvantage in the 1980's is an old one--a loss of jobs in traditional resource industries. Agricultural employment, including forestry and fishing as well as farming and agricultural services, dropped by over 10 percent during the decade. Mining experienced a bust after the energy boom at the beginning of the decade, with a loss in employment in rural areas of nearly one third. But traditional resource-based employment is much lower now than it was in earlier decades. These declines, although devastating in some areas, were actually relatively small compared to earlier decades and in the context of the rural economy of the 1980's. Moreover, as figure 1 makes clear, resource industry job loss and outmigration have historically been associated with rising rural incomes.

million per decade in rural areas (fig. 2). These new jobs were generally not high pay jobs, but they often were better paying than the alternatives. These manufacturing jobs absorbed some of the people moving out of agriculture, provided off-farm job opportunities for the increasing parttime farm population, and enabled some people who had moved to the city to return home. By 1980, over twice as many rural residents worked in manufacturing than in agriculture and mining combined. Manufacturing jobs were important contributors to the local economic base, helping to sustain growth in the rural service sector.

From 1980 to 1990, however, manufacturing employment declined nationally and the number of new rural manufacturing jobs fell to only 200,000. Even the failure of rural manufacturing to generate new jobs does not entirely explain the rural economic problems of the 1980's, however. Urban economies generally did better than rural economies in the 1980's despite a slight loss in manufacturing jobs in urban areas.

The rural problems in the 1980's stemmed not only from a decline in employment opportunities in traditional rural industries, but also an apparent inability to participate in the activities of what has been called the "new economy". During the late 1970's and 1980's, increasingly global markets and rapid technological change, both catalyzed by rapidly evolving information systems, meant declining opportunities in traditional production occupations and new opportunities in knowledge occupations.

The new opportunities were largely urban opportunities for people with relatively high levels of education. This is evident whether we compare changes in the types of jobs in urban and rural areas, changes in earnings, or migration.

Changes in types of jobs. The urban orientation of the new economy is particularly evident in manufacturing industries. In percentage terms, the change in total manufacturing employment between 1980 and 1988 was relatively small in both rural and urban areas (fig. 3). However, in metropolitan areas, there was marked shift in the types of jobs, with a tremendous growth in management, research, and professional jobs—over 30 percent—and a substantial decline in production jobs. In nonmetropolitan areas in contrast, there was little shift in types of jobs. Now more than in earlier decades, rural areas have low-skill production activities while urban areas have the management, research and professional tasks.

Changes in earnings. In 1979, young men working full-time earned about 10 percent more in urban areas than rural areas irrespective of education. This was probably about equal to the difference in the cost of living (fig. 4). With growth of opportunities for better educated workers in urban areas, the urban advantage increased to about 30 percent in 1989. The rural disadvantage also increased for young women. Thus, by the end of the decade,

younger, better educated men and women remaining in rural areas were often making a substantial financial sacrifice by their choice of residence.

Migration. Not surprisingly, the rural-urban earnings gap generated a considerable net outmigration of the better educated workers to urban areas. This migration was especially high for young adults. Between in 1988 and 1989, for instance, the net loss of young adult college-graduates was nearly 4 percent (fig. 5). On the other hand, there was a small net immigration of less educated young adults to rural areas. This may reflect the fact that housing costs had risen in urban areas during the 1980's, but earnings for the people with no post-high school education had not.

Why was the new economy an urban economy in the 1980's? One possible explanation is that, with relatively low education levels compared to urban workers and workers in other developed countries, rural workers may simply have been unable to compete in the world market and earn what we consider reasonable wages. A recent ERS study, Education and Rural Economic Development: Strategies for the 1990's, concludes, however, that education was not the rural bottleneck. Earnings for better educated workers rose more in urban areas than rural areas, suggesting a greater urban shortage relative to demand. Moreover, rural areas with relatively highly educated workers did not have an advantage over other rural areas in the 1980's.

An alternative explanation is that the remoteness and sparseness of rural settlements makes them largely unsuitable for complex manufacturing operations, industrial research, or other activities requiring high-skill, high-education employees and rapid access to information, technology, and finance. This explanation is supported by the fact that the geographic concentration of new economy activities into major cities has occurred in other industrialized nations as well.

Thus, while the rapid development of information technology has suggested to some that information-dependent businesses should be able to move out of urban areas to the countryside, and anecdotes abound about stockmarket traders and others moving to rural areas with their personal computers, faxes, and modems, there is little evidence that face-to-face contacts have become less important with the new technology. Indeed, it may be that information technology has speeded up the pace of change, making face-to-face contact more important than ever.

The residents of two kinds of rural areas are likely to do relatively well in the coming decade—those that are adjacent to large, growing metropolitan areas and thus likely to share in that growth by dint of proximity alone and those that have a pleasant

climate, mountains, and lakes or rivers and are thus attractive for recreation, retirement, and related activities. While agricultural industries may continue to do well, it seems likely that technological change and consolidation will continue to diminish job opportunities. The question is what will happen to rural areas without the advantages of proximity and natural amenities. Will ways be found to integrate them into the new economy without assigning them to peripheral, low-income tasks?

Figure 1
Nonmetro per capita income as a
percentage of metro income

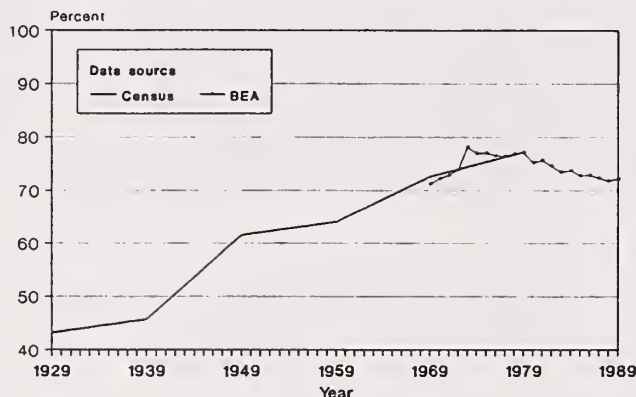
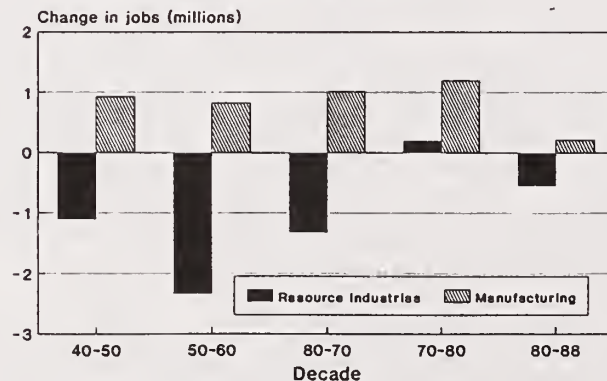
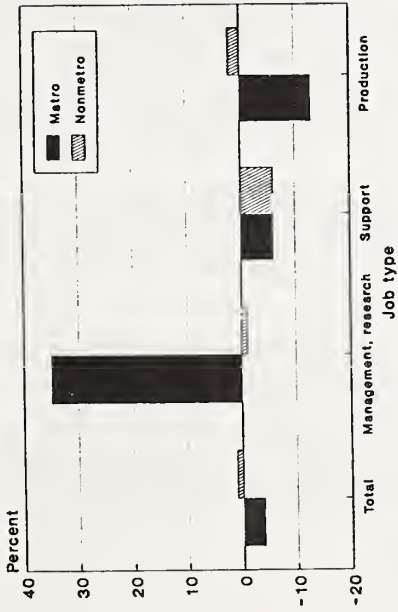


Figure 2
Manufacturing jobs grew in nonmetro
areas while resource jobs declined



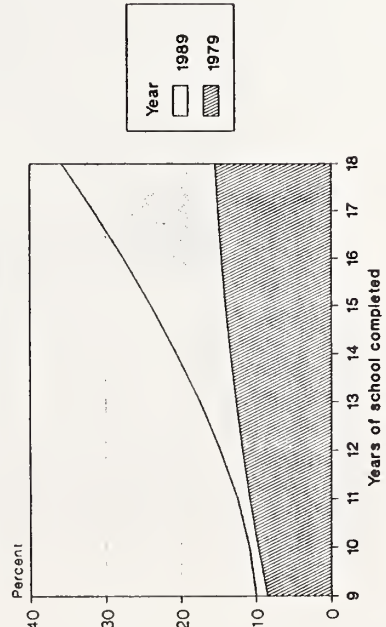
Source: Censuses of Population and
BEA.

Figure 3
Change in manufacturing jobs, 1980-88



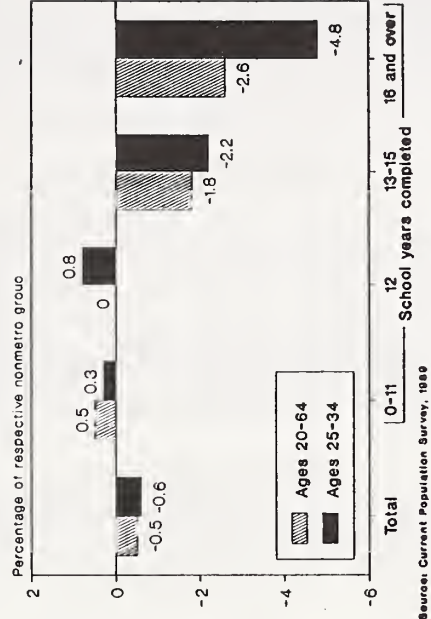
Sources: Census of Population, 1980
Current Population Survey, March 1988.

Figure 4
Metro earnings advantage over nonmetro,
men aged 25-34 working full-time



Source: Census of Population, 1960 and
Current Population Survey, 1990.

Figure 5
Net nonmetro migration from
metro areas, 1988-89.



Source: Current Population Survey, 1989

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MANAGING RURAL POLICY IN A FEDERAL SYSTEM OF GOVERNMENT

Winthrop Rockefeller
Chairman, President's Council on Rural America

My purpose today is to discuss some of the challenges we face in trying to respond to rural America's problems in light of our intergovernmental division of responsibilities. The previous speakers have eloquently spelled out the challenges that face rural America. I think those challenges can be simply described:

- Rural America needs to discover new ways of earning its livelihood, to supplement traditional resource-based and manufacturing industries as they become more efficient and their need for rural workers continues to fall.
- Rural America needs to develop the capacity to exploit market opportunities in higher value products, including the development of skills needed to produce these goods and services and the capacity to market them effectively.
- Rural America needs to develop methods of providing essential public services, including education and health care, that are suitable for the dispersed pattern of rural life.

We have already heard about the value of approaching rural development strategically. I believe the need for strategic action is self-evident. In a world in which economic competition is becoming more and more intense, greater intelligence of action will be required to find and keep a comparative advantage. I do not believe it is possible for rural America to keep pace in this new environment without clearly thought-out, well-focused action. That, to me, is the essence of a strategy.

Creating strategies that have a chance of lifting rural Americans from the economic problems that beset them will be difficult. Equally difficult will be the challenge of implementing those strategies. Both aspects--strategy development and strategy implementation--are critical to success. However, I would like to focus today on the second of these challenges, for I believe it has not received the attention it requires.

TODAY'S REALITY

In light of rural America's needs, it must be concluded that our government's management style does not fill the bill. We have attempted to meet rural America's needs--indeed, all of America's needs--on a project-by-project basis. We have assumed that single solutions fit all problems. This approach has led us to address complex issues in an *ad hoc* manner. It has also led us to accept, even to expect, micromanagement from Washington.

Today, it is clear that one size efforts do not fit all problems. Rural problems are interconnected, both across sectors and over time. Many of our solutions offer little more than band-aids that treat only symptoms and not the underlying disease.

Why have we failed to do better? And what must America do if it is to overcome this challenge to its ability to compete? I believe that institutional problems lie at the heart of our Nation's inability to respond effectively. I also believe that until we have established the institutional capacity to respond, we have little hope of making more than random dents in what is clearly a very large and very difficult problem.

These institutional problems have two principal dimensions: the problem of organizing action at any one level of government--or the problem of horizontal coordination--and the problem of organizing it across several levels of government--the vertical coordination problem. I will discuss each of these in turn.

Horizontal Coordination Within the Federal Government

A successful cross-country bus excursion depends, at a minimum, on one thing: the ability of the driver to map out a route and stick to it. The analogy applies to rural development: our limited national resources require unified, purposeful action to enhance rural America's ability to reach its potential. The problem, at the level of the Federal government, at least, is that on this bus ride, the passengers have each chosen different routes, and are all trying to drive.

Rural development is a difficult area in which to make policy, precisely because of the fact that it crosses so many issue areas. To strengthen rural America, advances will be

needed in many areas: in health care, in the creation of innovative industrial activity, in the skills of rural workers and business owners, in transportation and communications, and in other areas. Each of these areas falls under the responsibility of a different department; in some areas, such as business development, several agencies share responsibility.

A coherent response to rural America's needs will require coordination among the individual programs that touch on rural problems. At the present time, however, the Federal establishment lacks the capability to provide that coordination. Rather than acting together, Federal departments each pursue their own version of rural policy. No mechanism exists to identify or eliminate duplication or conflicts between programs, to articulate their contributions, or to fill gaps between them. In effect, nobody is in charge of rural development.

It may seem reasonable to ask why the Federal departments cannot simply be directed to work cooperatively across departments. After all, in a private corporation, the CEO would, after appropriate study, order the implementation of procedures to assure that the various divisions of the company were articulated.

The situation in government, however, is more complex. Unlike a CEO, no President has effective control over all units of the executive branch. Aside from major questions of policy direction, government policy is not made either by the President or by the Congress acting as a body. Instead, it results from accommodations reached within individual "subgovernments"--alliances among the congressional subcommittees, pressure groups, and agency officials concerned with any particular issue. Neither the President nor the whole Congress has any real opportunity to exercise major control over the day-to-day policy making within these subgovernments.

The rural policy management problem in the Federal government stems precisely from the division of rural issues into so many little subgovernments. Policy for rural health is made in one, transportation in another, business development in a third, and so on. This fragmented system provides no real opportunity for the President or anyone else to coordinate rural policy. Lacking that coordination, it should come as no surprise that our Federal rural policy is so lacking in coherence.

Because rural policy is made in this inconsistent way, and not comprehensively, we have fallen into a "project" mentality for solving public problems. We try to solve them by applying individual programs to them. Typically, we act on the basis of a short time horizon, seeking temporary relief from immediately pressing problems but ignoring the underlying, and often very different, long-term issues that become the problems of tomorrow.

The problem stems, at least in part, from the fact that we have not taken the time to understand the roots of rural America's problems and the connections between different aspects of those problems. The Federal government lacks any meaningful institutional capacity with the demonstrated ability to take and implement a broad, strategic view of rural needs and their solutions. This is not offered as an excuse for our poor national performance in responding to rural America's needs. It is a critique and a challenge to which we must respond.

Vertical Coordination in Our Intergovernmental System

The rural policy management problem is greatly compounded by the fact that the Federal government, in and of itself, has neither the authority nor the tools to address all of rural America's needs. Our constitution left economic development as one of many issues to be shared among levels of government, and the Federal, States, and local governments each have major roles in rural development.

The problem of coordination that exists horizontally within our national government also exists vertically within the intergovernmental system. Actions the Federal government takes are frequently not coordinated with the policies and programs of individual States. In addition, the fit between Federal and State policies and local aspirations is frequently not very tight.

The problem is hardly trivial. Although the Federal government's program resources give it an opportunity to provide critical leadership in rural development, the responsibility of carrying our rural development programs, and for funding them, rests with States and rural communities themselves. What is at stake is whether we, as a Nation, can adopt a unified, strategically-focused direction in our rural development policy.

Responsibility for intergovernmental coordination does not rest with the Federal government alone. Under our system of shared powers, the Federal government has no responsibility for the actions of States and localities. As a result, the Federal government cannot, by itself, solve this organizational problem. Instead, all major participants must be constructively involved in finding joint solutions.

THE POSSIBILITIES

Daunting though rural America's problems may appear, I believe there is reason for hope. By working together, there is much that we can do to rectify these management problems and thus address the challenges confronting rural America. Our ability to resolve these structural deficiencies is limited only by our creativity, but as a first step, I

believe that the following should be some of our more fundamental undertakings:

- Our approach to rural development must be strategically focused on enhancing rural America's economic competitiveness;
- We must adopt a consistent focus on rural development that yields a policy that is stable over time;
- The Federal government must act as a coordinated unit to achieve cohesive policies;
- We must achieve strong Federal-State collaboration; and
- We must respect the critical roles of rural communities and the private sector and involve them in meaningful ways.

The way to ensure that these objectives are accomplished is to institutionalize them. Several mechanisms already exist which, if properly encouraged and supported, can go a long way towards meeting these goals.

The Economic Policy Council's Working Group on Rural Development, which is composed of sub-cabinet representatives of the Federal departments having rural responsibilities, has been in existence since March, 1989. This Working Group has the capacity within its membership to make considerable headway in accomplishing these tasks, especially the first three. Let me emphasize the importance of strong coordination within the Federal government, which the Working Group has an especially important opportunity to influence. Without strong, articulated support for inter-departmental coordination from each and every one of these top policy officials, meaningful coordination within the Federal government is highly unlikely to occur.

A second mechanism which can help achieve improved management of rural development strategies is that of the State Rural Development Councils. To date, eight State Councils have been formed. These Councils, initially formed on a pilot basis, have been so successful in promoting communication and collaboration among community participants, Federal, State, and local governments that President Bush has asked the remaining Governors to consider organizing partnerships with the Federal government by establishing State Rural Development Councils. Real rural development will occur at the State and community levels. I believe these collaborative bodies have the potential to fill a critical void that exists in rural policy management in this country.

Finally, the President's Council on Rural America has an important contribution to make by assessing rural America's needs and the policy structures that are required to develop strong and effective responses to them. In July, 1992, the Council will present a set of

recommendations to the President on how a policy sphere as diverse and fragmented as rural development can be effectively managed and led.

The Council has just completed six months of listening, both to experts on rural America and rural Americans themselves, in order to more clearly understand the problems facing rural communities as they undertake development. What we have learned is that rural communities have the will and the desire to improve their quality of life. What they ask from the Federal Government is technical assistance in understanding the roots of the challenges they face and the alternatives they have available to them, special sensitivity to the unique problems that face each region, and flexibility in the implementation of Federal programs intended to help rural communities reach their development goals. We expect to offer the President a means to respond to rural America's request: a proposed structure by which the Federal Government can help rural America to help itself.

WHAT WE MUST DO

As a Nation, the rural development challenge is one we must take up. The health of the rural economy and the well-being of its people are important to more than rural citizens themselves. They are also critical to the Nation's overall ability to maintain its competitiveness and standard of living as well as manage its wealth of national resources.

The task before us is difficult. It will call on the best we can contribute. But it is not impossible.

I believe we have it within ourselves to meet the task of finding better ways to do the job. Doing so, however, will require a commitment at all levels to succeed where past efforts have failed. At a minimum, the following will be needed:

- A commitment from the highest levels of our government to create an effective response to rural America's problems and to devote the institutional and intellectual resources needed to accomplish the task;
- A willingness to closely examine what we have and what we have done in rural development;
- An openness to forging effective working relationships with other organizations that have a stake in rural development and that have resources to contribute to its accomplishment;
- An investment in identifying the practical benefits that can be expected from alternative rural development strategies;

- A willingness to move beyond programs we have found comfortable and experiment with new ideas;
- A desire to exercise our creativity to build new strengths to supplement the best of what we now have in rural America.

All of these commitments are within our power to make. What is required is the willingness to start anew to build a stronger rural America. If we take this step toward building a structure that is flexible enough to respect each community's differing needs and aspirations, that integrates and articulates the elements that can contribute to stronger communities, and that links our knowledge about rural America and rural development with strategic purpose, we will have taken the first steps down a path that will lead us to a vital rural America that will prosper in the 21st Century. We will have set the foundation for development that can last longer than a lifetime. It is a giant leap we can take by beginning with small steps. It is a path we must follow.

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MANAGING RURAL POLICY INITIATIVES IN THE INTERGOVERNMENTAL SYSTEM

Beryl A. Radin
Professor of Public Administration
Washington Public Affairs Center
University of Southern California

In January 1990, President Bush announced the steps his administration would take "to strengthen the delivery of Federal support for rural development." The administration gave then-Secretary of Agriculture Clayton Yeutter instructions "to implement six proposals designed to improve the coordination of rural development programs and serve as a catalyst for future initiatives."¹

The six elements included the creation of a President's Council on Rural America; establishment of a Working Group on Rural Development as a subgroup of the White House Economic Policy Council; creation of a Rural Development Technical Assistance Center and Hot Line; a rural development demonstration program; and an effort to target rural development programs on specific activities. In addition to these federal-level activities, the Initiative also envisioned the creation of state-level rural development councils that would coordinate rural development efforts among federal departments and agencies and establish collaborative relationships with states, local governments, and the private sector.

By the end of 1990, Rural Development Councils were established in eight states: Kansas, Maine, Mississippi, Oregon, South Carolina, South Dakota, Texas and Washington. Each of the Councils was initially organized by the state Farmers Home Administration director and included a variety of federal officials as well as individuals from various segments of each of the states.

At the same time, a management group (known as the Monday Management Group -- MMG) was established, made up of representatives from the participating federal departments. The MMG focused on outcome monitoring, served as a conduit for federal officials who would act as liaisons with the states, worked with the National

¹ The White House, Office of the Press Secretary, January 22, 1990.

Governors' Association (NGA), and provided a link with the Working Group on Rural Development of the Economic Policy Council.

Early in 1991 it became clear that the activity that was taking place in the eight states provided an important source of information for those interested in the role of states in rural development. Upon the advice of the State Policy Program of the Aspen Institute, the Ford Foundation provided a grant to support a data collection activity in each of the states, documenting the baseline process for the formation of the Councils. The grant was linked to on-going evaluation activities of the Aspen State Policy Program undertaken by a team operating out of the Washington Public Affairs Center of the University of Southern California's School of Public Administration. A monitoring team of eight academics was assembled, five of whom resided in the relevant state and three travelled to the state. This paper is drawn from the report of that team.²

Expectations

The design of the Rural Initiative focused on two broad goals: improvement of coordination among federal agencies and improvement of the effectiveness of the federal government's rural efforts by adopting a strategic and comprehensive approach to rural development.

The Bush Rural Initiative emphasized four principles in its design. It envisioned a central role for the private sector, reflecting the belief that rural development is dependent on the ability of the private economy to be productive and compete in world markets. It argued that the benefits of development must address the deep economic disparities that exist in rural America. It called for a lead responsibility for state governments in rural development as well as responsibilities for local government, private businesses, and nonprofit organizations. And it envisioned a goals-oriented process of strategic planning, linking fiscal limitations with specific programmatic objectives.

The eight original states chosen by Washington-based officials to participate in the pilot phase of the Rural Initiative represented jurisdictions with a diverse array of experiences, problems and socioeconomic conditions within them. Despite this diversity, however, the design of the effort was conceptualized as a way for the federal government to stimulate change within the states.

Several aspects of the effort were important and somewhat unique in terms of past intergovernmental change projects. First, it was organized at the state level (rather than in Washington or at the federal regional level). Second, it was composed of a range of federal and state officials, drawn from many different federal departments, who are not often brought to the same table. Third, its determination to allow equal

² Beryl A. Radin, *RURAL DEVELOPMENT COUNCILS: PRELIMINARY FINDINGS AND CONCLUSIONS*, A Report to the State Policy Program of the Aspen Institute, Washington Public Affairs Center, University of Southern California, October 1991.

representation of federal and state officials in a state-level organization was not typical. Fourth, the presence of a White House Council and Washington-based agency group (the Monday Management Group) was not usual. Fifth, the federal participation in the effort was devised as active but was meant to emphasize procedural guidance rather than substantive direction.

Overview

Given the diversity of the American society, it is not surprising that there are dramatic differences between the experiences of the eight states in this project. The eight states represent very different populations, economic structures and opportunities, institutional arrangements, political realities, sizes and regions within the U.S. As such, each of the Councils within the project responded to the opportunities and responsibilities contained within the effort in unique ways.

However, it is somewhat surprising -- given the uncertainties related to the availability of federal resources -- that each of the state Councils took the initiative seriously. As we assess the early months of the Council experience we can make the following comments about its positive attributes:

- The project became more than a Washington-devised federal directive; it evoked more than compliance behavior. States wanted to use the federal-state councils to accomplish their own goals.
- During the first nine months of the project, states put a distinctive state "stamp" on each of the Councils.
- Networks and new relationships were established in each state. Individuals from both federal and state agencies who rarely -- if ever -- worked together were talking to one another. In some cases, this represented the first time that these conversations were held.
- As a result of these networks, there are strong indications that organizations and people who had not focused on rural issues were now more aware of the needs of individuals living in rural areas.
- The initiative assisted states to go beyond narrow definitions of economic development (e.g. recruitment and smokestack chasing) and many moved into a broader conceptualization of rural development that included community development issues, social services and infrastructure.
- There is momentum within each state to continue the process.
- Learning has taken place within each state about the nature of the rural development policy issue, the dimensions of existing state and federal programs, and the problems of its rural residents.

- State Councils found ways to deal with the complexity of the rural development policy system at both the state and federal levels.
- The flexibility that has been intrinsic to the design of the initiative has been valued. It is critical to the enthusiasm of the states and valued by the participants.

These accomplishments are not trivial. They represent an important step forward in many states and suggest that there is a significant and appropriate federal role in such activities. Many states are on the threshold of a substantive program that may change rural development. However, the efforts are not without problems.

Questions of Program Design

It is obvious to a group of observers that there have been significant modifications in the original design of the Rural Development Councils since the first group of states were chosen and Councils organized in the fall of 1990. This experience will prove to be extremely useful as the second round of states are chosen in early 1992. As the Washington federal staff responded to specific questions and problems raised by the participants within the states, they -- as well as the individuals in states -- learned more about the realities and possibilities for carrying out such an initiative and modified the process as it proceeded. While the flexibility and openness of this process was positive in many ways, it also created some confusion and problems for the Councils that were both time-consuming and not productive in terms of immediate program development.

We have characterized the design issues in this project as problems of 1) time, 2) mixed signals, and 3) substance.

1. Time. Without exception, the eight Councils found themselves engaged in a process that was much more time consuming than they expected. The amount of time required for the development of the Councils was extensive in two separate but related ways. First, because the Councils involved new and continually changing configurations of participants, the process of developing relationships and a sense of identify and shared goals was protracted. The original one year time horizon envisioned was unrealistic. At the minimum, an effort of this kind requires two years to develop. Even if some of the issues that created problems for the first group of states are addressed, it is likely that a new set of issues will be surfaced as the group works out its own identity.

The second but related time issue involved the amount of time that individual participants found that they had to spend on the project. Few -- if any -- of the participants were relieved of other responsibilities by their agencies and they discovered that frequent meetings and assignments were required to develop momentum for the Council.

Time was also a problem as it related to other developments within the state. Federal council participants discovered the temporal nature of state "policy windows" and the constant flux that is the reality in states, given elections, budget crises, reapportionment and other state issues.

2. Mixed Signals.

a. *A Federal or a Federal-State Council?* Although the Washington based federal officials involved in the project always valued flexibility for the state Councils, the shift of the initiative from Federal Councils to Federal-State Councils created a degree of confusion within the project. When the Councils were organized, there was a tendency for federal officials to find state "clones" of themselves -- their state counterparts related to specific programmatic responsibilities. To some degree this was understandable; federal officials were not only charting a new set of agency relationships but were also dealing with a policy area that was difficult to define. While many of these state officials were important players, this tendency to develop a state mirror image of the federal players did not pay sufficient attention to the program and policy reality of the specific state. This was particularly problematic if these state realities involved agencies and programs that were not under the executive control of the governor. In some states, it took several months for the Council to reach out to actors that had been involved in past rural development efforts and would have appeared to be "obvious" participants.

b. *What resources are available?* Council members were both puzzled and annoyed about the lack of clarity regarding the federal resources that would be available to them to support their activities both in the short term and in the long term. In the short term, Councils were faced with fund raising problems; in an era of state budget shortfalls, it was particularly difficult to obtain funds from state agencies. In the long term, there was confusion about the relationship between these efforts and those planned for the Rural Development Administration. At least some participants believed that the Councils were the "stalking horse" for the RDA and both state and federal officials were apprehensive about the longer term consequences of changes in their programs associated with this development.

c. *We've seen this movie before.* Several of the states had participated in earlier rural development initiatives (particularly those that were federal demonstration projects) and were somewhat cynical about what could occur through this project. Some federal officials in states were not convinced that this initiative would be around in the future and found it difficult to be extremely enthusiastic about its longer term impact. In addition, many federal officials within the state operated through well defined instructions from Washington (or the regional office) and rarely had the opportunity to become involved in the definition of a policy initiative.

3. Substance. As the Council process has unfolded and reached for a substantive agenda, there appears to be a movement from federal predominance to ascendancy of state (and sometimes local) officials. Although the Councils were initially organized by the federal officials within the state, these individuals have

tended to play a more supportive and deferential role to the state officials as the specific activities are devised.

a. *The extent of federal program change.* The original design of the initiative accentuated the need for formal policy and program change that could only be made in Washington. In at least a few of the states, there continues to be a belief that the Councils will identify what they view as problems with federal requirements, send their recommendations to the Monday Management Group and the Economic Policy Council, and expect the changes to be made by the White House. In some cases, it is assumed that problems require large scale change while in others the need is for somewhat less dramatic -- but still Washington based -- shifts. In several cases, the states that have focused on more comprehensive policy changes appear to down play (or ignore) the role of Congress in the policymaking process; there is nothing in the process that requires state participants to think more realistically about the structural realities of federal decisionmaking.

Several of the states -- particularly those with some years of experience with joint federal-state activities -- have more modest expectations about the dimensions of federal program change that will come from the effort. They focus on the level of discretion that is already available that might be underutilized and create methods that allow them to "torque" the existing system to maximize collaboration and cooperation. In addition, some of the federal agencies (particularly the human services agencies) have had more experience with collaborative and networking activities involving both other federal as well as multi-state agencies than have other federal organizations that deal with only one state agency. These experiences have led the federal officials to focus on specific and somewhat narrow projects for collaboration rather than broad systemwide change.

While they may send their suggestions to Washington, few of these changes would require more than administrative modifications. In still other cases, participants focus on the allocation decisions that are made within the program elements and make the changes themselves within their own agencies.

b. *Thinking about the state.* Although each of the federal Council organizers did attempt to deal with state officials before the start-up meeting, the reconfiguration of the project as a joint State-Federal effort raised some additional questions.

- In many states, the governor is not structurally strong (five of the eight states are viewed as on the weak end of the NGA's continuum of gubernatorial powers) and has limited ability to speak for the state. The legislative role has been largely ignored in the process; in some states, elected agriculture commissioners, chief state school officers, and others are not inclined to spend energy on a project that is viewed as the "governor's effort." At the same time, the governor's role is important, particularly in the ability of that official to utilize a statewide "bully pulpit."

- For many states, this is not the first effort to focus on rural development issues. Councils were not encouraged to do a "scan" of the past state activity early in the process, allowing them to identify others who should be involved and to learn from what had been done previously.
- The project assumes that it is relatively simple to define the dimensions of "rural" within a state. Although census information is of some use in this endeavor, it was not adequate as a sole source in any of the Council states. Issues of geography, other population characteristics, as well as culture are a part of such a definition. It is important for the participants to think about this problem early in the Council organizing process and be given the flexibility to define "rural" within their own state circumstances.
- States vary in the way that they relate to local government. In some states, it is not possible to undertake an effort such as this one without immediately involving local government and substate areas. In other cases, the state has a much more centralized mode of operation.

The Federal Role and Federal Requirements

Although the design of the project allows a great deal of flexibility to the specific Councils, the Washington-based project staff imposed a set of requirements on the Councils in the form of four deliverables: a needs assessment; an inventory of rural development resources; a strategic plan for meeting the needs; and an implementation plan. The experience with these requirements is mixed. In some cases, the state has adopted a minimal compliance mode to conform with the requirements; in others, the state Council took the requirement seriously; and in still others, the state decided to ignore the substance of the requirement.

Some states simply took the mission statement language from the federal initiative and substituted the state's name for that of the federal government. Other states decided to use the definition of mission as a way to discuss and define the specific and unique identity of the Council; these efforts produced mission statements that emphasized particular values (e.g. local involvement, community development activities). Some states viewed the mission statement as something that was done once (to satisfy Washington) while others treated it as a point of departure for activities and that the statement would be refined and changed over time.

Some of the states have worked through the needs assessment requirement by simply compiling all of the existing studies and analyses of rural development issues. Others have decided to revisit that past work, either by devising new data collection methods or by attempting to identify conflicting recommendations and analyze them.

The strategic planning requirement has also evoked a variable response. For some states that have already developed a total vision or grand strategy for rural development, the imperative is devising a specific implementation strategy. States that have not yet conceptualized such a grand strategy may find it useful to do so;

however, some may not have done this in the past because it is too divisive within the politics of the state to make a grand agenda explicit. They are likely to avoid such a task through the Council as well. For these states, the product "plan" that is developed may simply be a cobbling together of some specific, narrowly defined projects or demonstrations and outputs of other committees.

There are several issues that are relevant to the definition of the federal role:

- The variable authority and role of federal state and regional offices. Some of the federal programs that are "natural" players in this process do not have a program or even a generalist presence in either the state or in the federal regional office. Federal regional officials who are constrained by travel funds and distances have a limited ability to participate fully in the process. These limitations are particularly relevant to the social services program areas.
- The limitations of USDA responsibilities. The broader the definition of rural development that is used by the Council, the further away the process moves from USDA program and policy authority. Yet the entire staff support for the project comes from USDA.
- Federal program "learning." At the present time, there does not appear to be a formalized mechanism for federal program specialists in the Council states to meet and exchange experiences. Such an exchange would allow the Washington-based program officials to get a sense of the "bigger picture" defined by the Councils and, as well, to focus on changes in program requirements and processes that may be made within their existing authority.

Substantive Agenda

Although it is too early to know the substantive results of the Council process, it is clear that most of the Councils have organized themselves in a way that facilitates a broad definition of the issues and actors involved in rural development. In no state is the Council viewed as the purview of the agriculture community; indeed, these actors may actually be underrepresented in some states. The Council process has also positioned the discussion to move beyond narrow definitions of economic development (e.g. smokestack chasing and recruitment of industries outside of the state) to focus on the value-added dimensions of economic development within the framework of existing industries and commerce within the state. In many states, the small cities Community Development Block Grant program and other aspects of community development are an important part of the discussion, bringing in efforts related to infrastructure development and housing programs.

As the Council agenda becomes enmeshed in the unique state economic, social and political context, in some states the rural banner becomes less distinct.

Depending upon the particularities within the state, it may be more useful to talk about issues of poverty or geography than to focus on problems or solutions that are labelled "rural." In yet other states, the framework "rural" facilitates coalitions and broadened support for programs and change.

There are some state Councils that may avoid specific substantive agendas as they continue their work, choosing instead to highlight their process contributions as brokers, advocates or coordinators. In those cases, the Council will not be identified with a particular solution or set of actors within the state and will invest in the process as an end in itself.

Future Directions

At this writing, the eight original Rural Development Councils are barely a year old. While still in a developmental stage, each of the Councils has identified a very broad array of players. The specific cast of characters varies by state but in all cases the activities that have been undertaken cross traditional policy boundaries and have moved toward the creation of a new rural development policy system. That system includes multiple levels of government, many different programs and issues, and various elements of the private sector. New collaborative relationships have been established that include multiple players in the states as well as in Washington, D.C.

In 1992, a new set of states will be selected to participate in the Initiative and establish their own Councils. Much has been learned during the past year that should prove to be helpful in that task. At the same time, it will be important to follow the second year developments in the eight original states to examine how they move into a problem-solving mode. For them -- as well as for the second group of states -- the real test will be whether they are able to improve the quality of life for citizens who reside in rural America.

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COORDINATING RURAL DEVELOPMENT WITH NATIONAL STRATEGIES

James T. Darby
Executive Director
Santee-Lynches Regional Council of Governments

Introduction:

In the context of local government and quasi public organizations seeking to successfully take advantage of today's federal domestic assistance system of public programs and services, the policy bodies of municipal and county governments and special purpose community non-profit organizations are typically hampered by one or more barriers.

With finite limits on the availability of federal resources, the eligibility criteria for public assistance programs and associated internal agency guidelines and regulations have a "self eliminating" impact on qualified applicants and constitute tests of the local government's or community organization's capacity and commitment to self help. Many rural local governments are individually unable to capitalize on available resources targeted by the Congress and federal agencies for their use.

It has also been my contention that today's rural needs are not due solely to inadequacies in the volume or diversity of public assistance programs or services. To the contrary, I see the underlying problem as one of effective public resource management and allocation. Over-management at the federal level and inconsistency in geographic allocations or delivery of services at the state and local levels produce mixed results when assessing effectiveness of individual public assistance programs. There is an almost desperate need at the state and local levels of government for recognition and further development of existing resource management and coordination capacities and to emphasize identification and mandatory utilization of the existing linkages necessary to blend public and private resources: financial capital, technical knowledge, non-capital material resources, and human resources in the form of time for community development and economic revitalization of rural areas.

Problem Statement:

At the risk of being redundant by perhaps repeating remarks made by previous speakers, please permit me to open my topic by identifying what I have experienced as the most common barriers to successful rural economic revitalization. I will express these barriers as inherent weaknesses typically encountered when working with rural communities; i.e. municipal and county governments, and single purpose non-profit community corporations.

*** Dilution of volunteer leadership capacity:** Local leadership capacity characteristics for the purposes of this paper can be measured simply as: (1) the basic skills, experience, and innate intelligence to perform the required tasks, (2) a positive attitude and a willingness to subordinate personal interests and business concerns in favor of larger community interests--a servant's heart; (3) sufficient personal financial independence to be relatively insulated from special interest pressures--"own person"; (4) the willingness to commit the time necessary to successfully complete the assigned task.

A rough rule of thumb would be that, on average, there is one person per thousand in the rural population who would exhibit, for the most part, all four of the above characteristics. Therefore, in a typical county of 25,000 population, one might anticipate 25 "qualified volunteers" who have previously been devoting their time to other jobs or vocations before entering some form of public service. These leaders typically are distributed in the public structure as follows: county council 7, city council 5 per unit, school district board of trustees 7, other elected offices 3 to 5, sub totaling a minimum of 22. Then you have the hospital board, planning commission, development board, and other public and private boards and commissions. Too many critical tasks and not enough qualified leaders equals leadership overload to the point of individual ineffectiveness and personal or professional exhaustion.

***Data Base Inadequacies:** Data, timely gathered and correctly interpreted, leads to opportunities for more effective decision making. Nonexistent or ineffective financial records, other data collection, and analysis systems in the public sector; lack of a general understanding of the short and long range impacts of public resource commitments; and inability to recognize developing trends and to plan accordingly, have the same negative impact on units of local government as they do on private business. Moreover, key private sector leadership in rural communities often lacks public administration background or the specialized technical knowledge required to address the multiplicity of subjects dealt with at each policy board meeting. The perception by many local leaders of a personal inability to adequately interpret and express their needs in

public assemblies often keeps local officials away from larger tables of public discussion and, therefore, minimizes their opportunities for collective advocacy on behalf of mutual concerns. A typical reaction from local leadership under these conditions is, "if you don't understand the question or don't know the answer, do nothing", and one of the two following events will occur: 1) the problem will eliminate itself; or 2) help will come in the form of a resource from some higher level agency. The guiding principle here is, "if you don't take the risk, you don't get the blame if something goes wrong".

*** Isolation and crisis management:** The previous points precipitate levels of isolation that often mandate an after-the-fact crisis management responsiveness. This means prioritization based on allocation of current resources and reacting to only one issue at a time. Responses to positive opportunities are handled in the same crisis management format. Those communities whose public officials and professional administrators regularly attend training sessions sponsored by statewide, municipal, county, and regional associations typically progress more quickly in responding to common goals and issues than those communities that don't participate at all. The difference is quite notable. The expanding complexity of business affairs in both the public and private sector necessitates units of local government joining together to capitalize on existing public institutions/organizations exhibiting higher level multidisciplinary management and creative problem solving skills. Such public joint ventures offer cooperative economies of scale by demonstrating capacities for serving more than one community at a time.

*** The Vested Interest Status quo Issue:** If the ideal public board or policy body could be formed it would likely fall victim eventually to external "vested interest" or the economic or political status quo. The social, political, and economic relationships and interdependences in rural areas more than in urban areas create "a pecking order" through an established non-elected power structure that often evaluates issues and opportunities in terms of benefits to special interests.

*** Polarization Through Political Convention:** The single member district political convention mandated by "the one man one vote" constitutional principle tends today to isolate rather than join together constituent groups. Isolated constituent groups create special service demands for the few rather than recognizing and emphasizing sharing in the common concerns of the whole. Today's diverse public opinions and attitudes, often brokered as political clout, facilitate polarization even in the smallest political subdivisions and result in fractured public trust and delay in the process of seeking and disturbing limited resources.

Therefore, many individual public sector professional managers particularly since the 60s, have fallen victim to "the fast food solution (put in your order, pick up your

check \$) rut" seeking simple or quick fix answers in the form of federal and state resources to be used as bandaids to address the short term local needs rather than directing attention to the above difficult community issues. This "follow the money concept" produces many political kudos, but it also often derails even rudimentary local/area strategic planning efforts in such a way that prioritization of the real needs becomes almost impossible. This type response is also event oriented rather than process oriented and produces limited, if any, equity in the development of problem solving skills among community elected officials and recognized advisory citizen groups.

The typical barriers identified above, unaccounted for either singularly or collectively in national rural policy and strategy formation, will continue to constitute formidable obstacles for units of local government to overcome in organizing themselves to address community needs, to identify opportunities, and to link and capitalize on available public and private resources.

Adaptive Countermeasures: South Carolina's Experience.

South Carolina's experience in developing adaptive counter measures to these and other problems impacting the responsiveness of local governments has been gained through the establishment of a network of legislatively authorized multi-county substate planning and development districts. Originally these multi-county districts were known as Regional Planning Councils, but many are today known as Councils of Government or COGs. South Carolina has 270 municipalities distributed among its 46 counties. The substate planning district pattern, authorized by the South Carolina legislature in 1967 and amended in 1970, created 10 multi-county districts along economic, social, cultural, and political boundaries with each district having one or more urbanized growth centers.

For a point of reference, my region consists of four counties and 11 municipalities. It has a land area of 2,529 square miles and, based on the 1990 Census, a population of 196,000 persons. The region's largest city-Sumter, SC-has a population of 52,000. The closest urban center is 45 miles away and is the state capital -- Columbia, South Carolina -- with a population of 98,052. My Council of Governments organization was established in 1970 and is governed by a 24 member policy board of which 66% are municipal or county elected officials, many of whom are mayors or chairmen of county councils. Funding sources for regional organizations vary, but typically 15% comes from local government sources and 15-18% from state appropriations. The balance of the

organizations' budget comes from federal and state agencies in the form of service contracts and grants for special programs: Economic Development (DOC - EDA), Labor Force Skill Level Enhancement (DOL - JTPA), Community Development (HUD-CDBG & FmHA), Aging (HHS), to name a few.

The regional movement began in the United States in the 1950's and 1960's primarily as a mechanism for the federal government to organize and to coordinate the federal grant process at the state and substate level. The formation of regional councils in South Carolina created a consistent geographic framework within which planning and organizational activity could be developed and maintained. The program activities and work agenda priorities of the early years were often those of the federal government. Too often the varied needs and priorities of local governments were subordinated to national goals and objectives with a "one size fits all" federal prospective on fundable benefits to be derived from its programs.

In the years since federal financial assistance reached its peak in the mid 1970's, the role of the councils has changed substantially. This came about primarily because of the change in the federal funding role and partly because of growth and maturity of the regional councils themselves.¹ Continuing today to facilitate this transition at the local level through the development of regional staff and policy board skills are two national associations based in Washington DC: the National Association of Regional Councils (NARC) and the National Association of Development Organizations (NADO). NARC reports in recent correspondence (11-12-91) that, of the approximately 38,500 general units of government below the state level (counties, cities, towns, townships), regional councils represent nearly 34,000 units. Both of these nationwide entities in turn play instrumental roles in early identification of national trends and by informing regional councils of the status of federal programs that are essential to the local governments served by the COGs.

Some 20 plus years after their original inception in South Carolina, the ten regional councils have among their collective assets staff of 175 and approximately 497 active policy board and advisory council officials. These ten public forums offer years of intergovernmental relations experience and creative problem solving skills in both rural

¹The South Carolina Advisory Commission on Intergovernmental Relations, Regional Councils of Government in South Carolina 1991, (SCACIR, 1991), pages 4 and 5.

and urban government environments. This professional staff and policy official equity has held South Carolina and its ten substate regions in good standing as the federal system of programs and policies has remained in a state of transition through the years. The appropriateness and value of the regional council network to South Carolina was again made evident in the low key but effective role the regional councils' policy body officials and executive personnel played in influencing critical intergovernmental communications and decisions relating to the formation and development of the South Carolina Council on Rural Development in response to President Bush's Rural Development Initiatives. The Bylaws adopted by the South Carolina Council reflect both the intent of the national rural initiative statement and the spirit of intergovernmental and private sector cooperation envisioned as critical to the rural development effort to be implemented in an era of finite, even reduced, public resources.

The COGs over the years have been part of a South Carolina team which includes federal agencies with offices in South Carolina or with regional offices located in Atlanta, state agencies, private sector interests including, business and industry, utility companies, banks, rural electric cooperatives, and of course member representatives from the units of local governments, and others.

The statewide South Carolina Association of Regional Councils (SCARC) through its 33 member forum of elected officials and community leaders appointed from each council continues to provide the invaluable service of fostering a better understanding of regional problems and identification of resources to capitalize on both regional and statewide opportunities. Whether collectively or individually the substate district network in South Carolina functions to facilitate mutual effort and cooperation in joint undertakings among state, county, municipal governments, and the private sector.

In carrying out these activities the South Carolina regional councils constitute a significant statewide resource to successfully counter the otherwise natural tendencies of many local units of government to bog down or be overcome by the inherent weaknesses described here.

The State/Federal Rural Development Council Concept:

The South Carolina Response

The South Carolina response in addressing the opportunity offered by the State/Federal Rural Development Council concept and initiative embodies an improved understanding of all the positive and negative elements gained through the last 30 years of experience in seeking federal assistance to address state and local needs. South Carolina, a small state both in geography and population has in prior years found itself statistically in the lower quarter of many national measurements. Out of necessity, the state has developed internal mechanisms to more effectively link resources with needs. This process was formalized for the most part through the legislation establishing the South Carolina substate planning pattern referred to above. Given the increased pace of rural to urban transition that has been taking place over the past 20 years, the established substate district pattern has yet to provide a specific rural identity and consistency in addressing both problems and opportunities unique to the state's rural regions as opposed to successfully developing solutions to those problems such as housing and water and sewer infrastructure needs that have a statewide distribution.

The initial South Carolina experiences during organizational stages of forming the South Carolina Rural Development Council typify and underscore the differences between the state and federal systems of governance and methods of service delivery. The South Carolina constitution creates a weak governor, strong legislative system of state government. It has only been recently (1975) that the State Constitution was amended to authorize home rule which gives county governments as subdivisions of the state the same privileges and powers historically exercised by municipal governments.

The different forms of state and local government nationwide, compared with the relative consistency of federal authority over the years creates inherent difficulties for uniform application and implementation of federal program guidelines at the state and local level. Coming to grips with and understanding the inherent differences between state and federal missions and objectives from an implementation prospective became the major focus of the first multi-state rural development initiative training session. Governance misconceptions as much as the realities were initially difficult to identify and address effectively.

Later development of bylaws, which incorporated a framework for a work program and statements on the major objectives of the Council, became the process which facilitated state and federal communications and, ultimately, the realization that although critical agency and organization players work for different authorities, there was an absolute necessity as South Carolinians "to learn to work together as a team", utilizing all available resources for the common good. Again, the Council of Governments intergovernmental communications network constituted the common denominator in facilitating the bylaws development process by building on the state and federal cooperation experienced in providing resources through the COGs to implement projects at the local level. The net result of a cooperative spirit evolving from the South Carolina Rural Development Council formation process will become the catalyst for an identifiable rural advocacy strategy to articulate from the broadest possible base the needs and opportunities found in South Carolina's rural communities. This state/federal council is essential in order to level the playing field when competing with more populous urban areas for limited resources. In the political process where numbers count, linkage and advocacy for common concerns become critical elements in assuring fair distribution of resources. Without resources, process outcomes for rural areas will change little.

The Council as a Potential Tool for Merging Local and National Strategies on Rural Development Policy

If a national rural development strategy is implemented on the basis of a broad based reallocation of existing federal program resources into several more generally defined resource groups, then from the state's perspective, the state council, with its broad based public and private sector representation, would constitute a level of coordination for distribution of public and private resources. These coordination activities, however, should be linked directly to both a statewide strategic and comprehensive planning process that advocates appropriate regional approaches to both problems and opportunities. Such a process should also recognize the sequential nature of both the development and redevelopment process. The direct linkage of resources to an effective planning process was the foundation on which regionalism and the new federalism was based in the 1960's and 70's.

If, however, categorical grants remain tied to relatively inflexible federal aid goals and objectives, then the state council's role will consist largely of facilitating communications between local, state, and federal agencies. This role would be largely a duplication of existing efforts;

i.e. business as usual. The private sector, a key player with a vested interest in a sustainable revitalization of rural communities, will become disenchanted and, over time, will abandon effective involvement in the rural development process.

Assessment of State Council Progress to Date:

It's too soon for an accurate assessment of the South Carolina Council since it is still early in its formative stages having only recently adopted its Bylaws and elected its officers. Consideration is, however, being given to its first demonstration project--an areawide sewer project. This effort will include two substate regions, several municipalities, and multiple counties. Sewer services have been proposed to be expanded into a rural area already possessing adequate water supplies. The proposed project will capitalize on excess waste water capacity in a downstream municipal treatment plant. Short and long range area economic development benefits can be documented. Multiple state and federal programs providing both financial resources and technical assistance have been identified by both the local participants and the State Council.

Other demonstration projects are in formative stages and will be presented to the Council later in the spring of 1992. Proposed projects presented before the Council will be required to identify positive and negative issues associated with the proposed rural development process and to relate to equity to be generated fostering future projects.

The Council's Bylaws identify a membership committee which will be charged with making recommendations as to the categories of private sector interest groups that should be included on the Council. Worthy of note is recognition by the Council of the need to have a structured organization to voice advocacy on multiple issues affecting rural development. Throughout the southeast many states are considering growth strategies and comprehensive planning needs. Urban communities have traditionally had access to these planning resources; however, rural areas and their respective growth centers have only recently begun to fully recognize the value of a regionally coordinated strategic economic development process. This new awareness has developed primarily as a result of environmental issues such as landfills and wetlands, the need for job creation and water and sewer infrastructure, and the need for a predictable rate of tax base growth. The cost of both environmental protection and job creation will necessitate capital investments in rural areas exceeding current formula per capita allocations of public resources.

Some key points to consider in order to facilitate the rural revitalization program's success:

1. Emphasize flexibility in the utilization of available public and private resources with accountability tied not only to program performance but also to implementing the correct sequential development elements of comprehensive plans. Such plans must be linked to a statewide rural development strategy based on interrelated outcomes.
2. Intentionally seek out opportunities to create linkages with agencies, organizations, and public and private institutions, that have similar mission statements and outcome goals and objectives.
3. Recognize the critical role currently being played by multicounty linkage agents: Councils of Governments, Regional Planning Councils, Area Planning and Development Organizations -- all of which are multidisciplinary organizations with experience and expertise in successfully coordinating, directing, and implementing multiagency missions and strategies for rural development.
4. Require active participation and intergovernmental cooperation as prerequisites for resource acquisition with a priority emphasis placed on work program activities that should be developed on an areawide or regional basis.
5. Formally adopt the "bottom up" approach to developing, local, areawide, or multi-county strategic and comprehensive plans linked to statewide growth strategy goals. Visualize such a process as incorporating the development of standards against which specific resource requests can be compared in order to measure benefits or projected outcomes. Identify and select key criteria to measure program impact in order to continuously monitor effectiveness of the rural development process.
6. Encourage the use of modern computer technology, specifically Geographic Information Systems (GIS), as the basic tool for both the strategic and comprehensive planning and policy development processes. Require, where applicable, statewide standardization of data base specifications. Place

among the highest priorities the identification and acquisition of capital resources to facilitate, at least to the regional level, the development of GIS capacities.

7. Consider mandating local government public administration organization and process training not only for elected officials, but also for volunteer leadership serving on appointed boards and commissions. Such training is essential in order to capitalize on the full benefits of the public/private partnerships in rural communities.

Available Resources:

1. South Carolina Rural Development Council Bylaws
2. South Carolina Association of Regional Council Bylaws
3. South Carolina Association of Regional Council Brochure
4. Regional Councils of Government in South Carolina 1991 Directory

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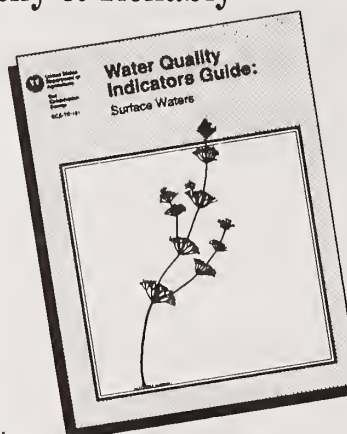
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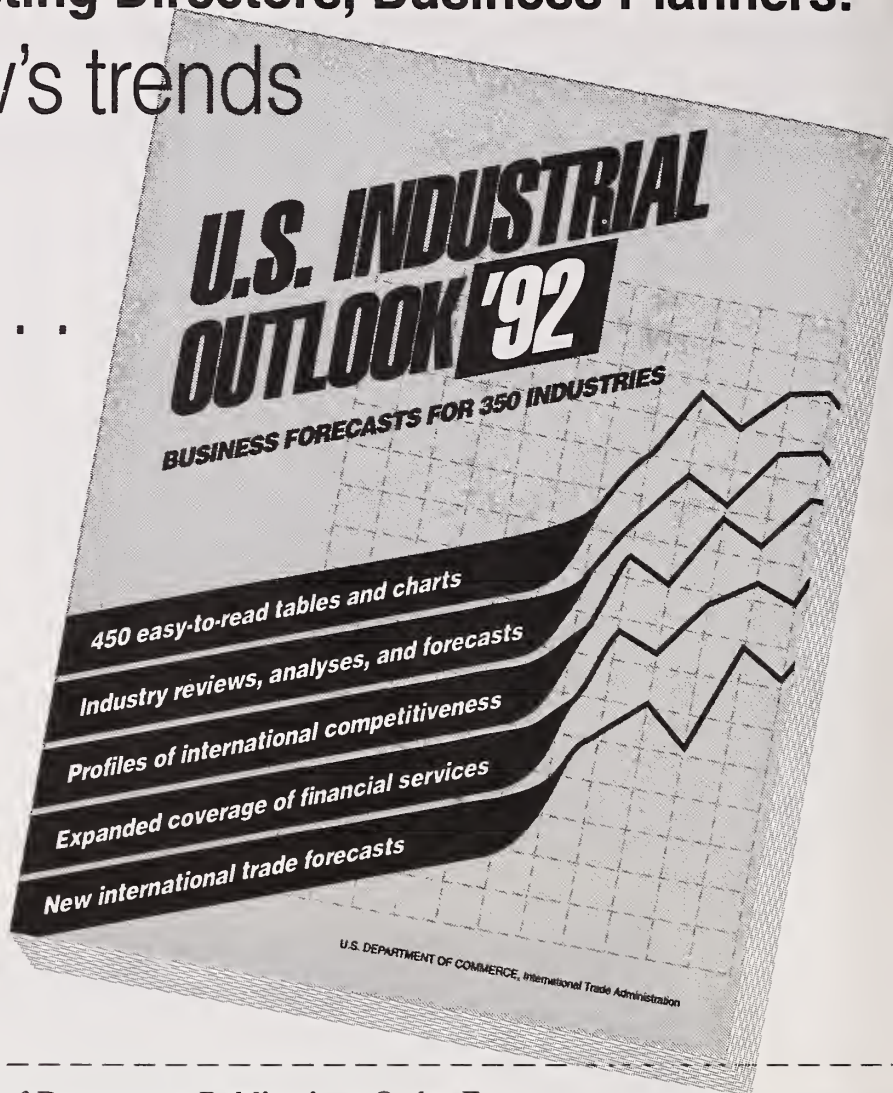
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